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<table>
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<tr>
<th>Ingredient</th>
<th>Min.</th>
<th>Max.</th>
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<td>Crude Fiber</td>
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- such perfect distribution
- such strength in every part.

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A FEW WORDS FROM DEAN BAILEY

WHAT impresses me most about the farmer folk as I come back to them after a year's diverting absence, is their growing sense of occupation-pride and their enlarging feeling that they are to play some new and more important part in the progress of the world.

The effort to subsist has made the farmer self-centered and self-sufficient. He has not been obliged to knock elbows with numberless fellow-men. He has shut himself up largely to his own farm, and has occupied an attitude of resistance to all encroachments of organized and rapacious interests.

But now he is beginning to make money, and he looks beyond mere subsistence. A new and real brotherhood is a growth in the world, expressing itself strongly just now in politics as it has but recently expressed itself anew in religion. The disadvantaged and forgotten man has been discovered, and his natural rights are being safeguarded to him. The farmer has caught a vision of a new time, and the world suddenly has a fresh meaning.

The student of agriculture may not formulate his outlook, even to himself; but as he is naturally an idealist (he would not seek college if he were not an idealist), he is necessarily looking to newer and larger opportunities in the open country than have formerly existed there. He would first make a good living, and would develop a farm with as good workmanlike and business qualities as may be found in the best manufacturing; but he would never be satisfied with this alone. He feels that some fine expression of himself is possible on a farm; and, although he may not know it, he is always inclined to place his best endeavor in those subjects and with those men that have the strongest human qualities. He is sure that he is going really to live,—to live himself out to the full and to find something in the common day that appeals to him with overpowering power.

I can ask no more of any student than that he express himself completely on his farm. He should be able to discover himself more fully there than any person expresses himself in a poem or a book or a painting, or in a work of engineering skill. He will add his forward outlook to the sterling and sturdy qualities of the farming people. It will be a great thing to see the open country when all the multitude of students shall have worked their personalities into it.
ON account of its cheapness, uniformity, and quick development of strength, the only cement practically used at present is the kind called “Portland.” There are almost as many brands of Portland cement as there are of wheat flour. For farm work choose some brand guaranteed by the local dealer to meet the standard specifications of the American Society for Testing Materials, which standards are approved by the National Government.

Cement takes water so easily that care must be exercised in storing it. Upon the regular floor of a good building place timbers close together, as a support for a false floor, upon which the cement should be piled. Keep it covered with canvas or roofing paper. Cement once wet sets up and is unfit for use. How-ever, lumps due to pressure in the store-house must not be mistaken for set-up cement. Such lumps are easily crumbled and may then be used.

Concrete is a mixture of Portland cement and particles of stone. The stone should vary in size from pieces one inch in diameter to sand grains. By so grading the stone, the smaller particles fit in the spaces between the larger pieces, thereby producing the most compact and the strongest mixture.

The best stone for crushed rock is one which is clean, hard, and breaks with sharp angles. Trap, granite, and hard limestone are among the best; the use of shale, slate, and soft limestones and sandstones should be avoided. The crushed rock should be screened on a one-fourth-inch screen to remove the fine particles. These small particles should be considered as sand, and if insufficient in quantity to make the proper proportion of the concrete, enough sand should be added to them to produce the required amount.

Gravel well graded in sizes is at least equally as good for concrete as crushed stone. Bank-run gravel, just as dug from the pit, seldom runs even and rarely has the right proportion of sand and pebbles for making the best concrete. The mixture most suitable has one part sand to two parts gravel, measured by volume, in which all sizes passing through a one-inch mesh screen and retained on a one-fourth-inch screen are considered gravel. As there is usually too much sand for the gravel, it is both advisable and profitable to screen the material and to remix them in the proper proportions. Gravel should have no rotten stone and should be clean, so that the cement may adhere to it tightly.

With dirty sand, no amount of cement will make strong concrete. Generally, sand is clean, but if not, it can easily be washed by playing a hose or flushing water upon thin layers of sand placed on a tight-jointed inclined wooden board. In size of grain it should vary uniformly from fine to coarse. All particles passing a one-fourth-inch screen may be considered sand.

Any good-tasting drinking-water is suitable for concrete.
The tools and equipment necessary for making concrete in moderate quantities are already at hand on a well conducted farm, or will be useful afterward for other purposes.

The list: 2 square pointed "paddy" shovels, No. 3; 1 round pointed tiling shovel or 1 garden spade; 1 heavy garden rake; 1 sprinkling can or bucket or 1 spray nozzle for hose; 1 water barrel or 1 length of hose; 1 sidewalk tamper or home-made wooden tamper; 1 sand screen made of a section of one-fourth-inch wire mesh nailed to a wooden frame; 1 measuring box or frame; 1 mixing board; 2 wheelbarrows with steel trays.

For farm work the following proportions are most suitable:

For concrete necessarily waterproof, 1:2:4 or 1:4

For all other ordinary purposes: 1:2½:5 or 1:5

Such proportions of three parts, as 1:2:4, indicate that the concrete is to be mixed 1 part cement to 2 parts sand to 4 parts screened gravel or crushed rock; and 1:4 that it is to be mixed 1 part cement to 4 parts bank-run gravel.

Measurement by counting shovelfuls is poor and uncertain practice. To avoid splitting of bags of cement, make as the unit of measurement one cubic foot, the amount of loose cement contained in one cement bag. Such measurements are made a very easy matter by gauging the wheelbarrows. For this purpose use a bottomless box holding one cubic foot. A shallow bottomless frame is also a convenient means of measuring. Such a frame, when set on the mixing

<table>
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<th>FOR TWO-BAG BATCH</th>
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<tr>
<td>1:2:4 or 1:4</td>
</tr>
<tr>
<td>1:2½:5 or 1:5*</td>
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*For bank-run gravel use the same table, but no sand is required except that which is already in the gravel.
board and filled, should contain the full amount of sand or one-half the quantity of gravel, or crushed rock, required for one batch of concrete.

The size of the batch is dependent upon the amount of help and the dimensions of the mixing board or platform. For work of ordinary size, sufficient room will be had on a "two-men board," 8 x 14 feet, framed solidly and covered with one-inch stuff with tight-joints the short way of the board. A wooden strip nailed around the outer edges will prevent the loss of liquid cement. For such a board and the proportions designated above, make the bottomless frame of the clear dimensions given in the table.

All the materials (slightly more than the computed quantities) should be on hand before beginning the work. They can often be hauled at odd times. The sand and gravel or stone should be piled so as:

To cause the least amount of wheeling; to make the mixing most convenient to the water supply; to allow room for the future location of the mixing board.

If the gravel does not need screening, place a bottomless frame, previously described for a 1:4 mixture on the mixing board and fill it level full with gravel. Lift the frame, spread the gravel slightly with the garden rake, and upon it distribute evenly two bags (the full amount) of cement. Set the frame upon the leveled surface of cement and gravel and again fill it in the same way.

Remove the frame and spread the entire mass by dragging it back and forth with the rake. Two men, opposite each other, then turn the batch with the square pointed shovels. Again use the rake. Keep turning until the cement no longer shows in streaks, until the mixture has a uniform color. Throw up the ragged edges and, with sprinkling can or hose with spray nozzle, apply water in quantity, according to special directions given later for each particular kind of construction. Turn again and add so much more water as may be required. If dry streaks are still evident, continue the turning until they disappear. With wheelbarrows, quickly remove the concrete and immediately use it in the work.

If crushed rock or screened gravel is to be used, fill the bottomless frame with sand and distribute upon it two bags of cement. Drag the materials back and forth with the garden rake, then turn, as described above, until the mass has a uniform color. Spread the mixture so that two framefuls of crushed rock or screened gravel may be placed upon it. Wet the mass and turn as for bank-run gravel until each stone is coated with cement mortar. Remove as for the gravel concrete.
THE PROGRESSIVE AMERICAN FARMER HAS CREATED FOR HIMSELF A LARGE NUMBER OF AGENCIES TO HELP HIM SOLVE HIS PROBLEMS AND TO MAINTAIN THE STANDARD AND CONTROL THE DISPOSAL OF HIS PRODUCTS. THESE AGENCIES, COUPLED WITH THE PROVERBIAL INGENUITY OF THE MAN Brought UP ON THE LAND, HAVE WROUGHT REMARKABLE CHANGES IN OUR FARMING IN A FEW GENERATIONS THAT WE CANNOT REALIZE EXCEPT AS We COMPARE CONDITIONS OVER A PERIOD OF YEARS. IT WOULD BE INTERESTING IF WE COULD LIST THE ADVANCEMENTS MADE IN THE PAST ONE HUNDRED YEARS. A PERSON WHO LIVED IN WASHINGTON’S TIME, A CENTURY AND A QUARTER AGO, DID NOT KNOW WHY TILLAGE MAKES THE PLANT TO THRIVE; DID NOT UNDERSTAND THE PRINCIPLES INVOLVED IN ENRICHING THE LAND; THE PRACTICE OF TILE-DRRAINING; A GOOD MOLDBOARD PLOW; THE USE OF FARM MACHINERY; THE PRINCIPLES OF ANIMAL-BREEDING AND PLANT-BREEDING; HOW PLANTS GET THEIR FOOD; THE NATURE OF CONTAGIOUS DISEASE; THE COMMERCIAL USE OF GREENHOUSES; COMMERCIAL FRUIT-GROWING; THE CANNING OF FRUITS; AGRICULTURAL NEWSPAPERS; AGRICULTURAL SCHOOLS; EXPERIMENT STATIONS. WASHINGTON HAD NEVER SEEN A SILO, OR A MOWING MACHINE, OR A WIRE FENCE OR A GRAIN DRILL OR A CAN OF TOMATOES. HE DID NOT KNOW WHY TREES BLIGHT, OR MILK SOURS; WHY THE BUTTER DOES NOT “COME”; WHAT PLOWING ACCOMPLISHES FOR THE SOIL. HE HAD NEVER HEARD OF POTASH, BALANCED RATIONS, COMMERCIAL FERTILIZERS, POLLINATION, COVER-CROPS, LEGUMINOUS PLANTS OR CLEAN MILK. HE LIVED IN THE AGE OF HOMESPUN, BEFORE THE COTTON GIN AND OTHER GREAT AGRICULTURAL MACHINES. HE KNEW NOTHING OF MODERN METHODS OF TRANSPORTATION AND COMMUNICATION. YET ALL THESE THINGS ARE COMMONPLACES AMONG FARMERS TODAY WHO SPEAK OF THEM AND DEAL WITH THEM AS MATTERS OF COMMON KNOWLEDGE AND PRACTICE. AND TODAY WE ARE LOOKING FORWARD WITH THE FEELING THAT WE HAVE JUST BEGUN TO KNOW AND THAT THE GREAT WEALTH OF NATURE-KNOWLEDGE AND ACHIEVEMENT LIES STILL BEYOND, UNTOUCHED.


LIKE EVERY OTHER GREAT HUMAN INTEREST, FARMING HAS HAD ITS CONSTRUCTIVE GENIUSES, MEN OVER AND ABOVE THE GENERAL RUN OF THEIR ASSOCIATES WHO HAVE BEEN LEADERS IN THEIR COMMUNITIES, IN THEIR STATES AND IN THE NATION. THESE HAVE BEEN TRAINED MEN. IN THE NOT VERY REMOTE PAST MOST OF THESE LEADERS WERE SELF-TRAINED OR SELF-MADE, AND ACHIEVED THEIR SUCCESS JUST BECAUSE OF THE WAY THEY WERE MADE UP—THEIR ABILITY TO COMPREHEND SITUATIONS AND TO REASON OUT WHAT WAS LACKING. TODAY, FARM BOYS AND GIRLS HAVE OPPORTUNITY FOR TRAINING THAT THE OLDER FOLKS KNEW NOTHING OF WHEN THEY WERE YOUNG. OUR FACTS ABOUT FARMING ARE NOW IN TEACHABLE FORM, SO THAT THEY CAN BE DISCUSSED FROM THE PLATFORM, THROUGH THE PRESS, THROUGH PRINTED BOOKS AND IN THE CLASS ROOM, LABORATORY AND ON
The young men today have not only the advantage of their father's life-time experience, but have accessible the best of experience of the best farmers everywhere. Time was when a young man who wanted to fit himself for farming as a life occupation had little opportunity to do so compared with the young man who wanted to go into other business. Farming is the last of the great industries to be brought into our educational system and given equal attention and equal dignity as a field for men's life efforts. Agriculture had a hard fight for recognition, and students studying agriculture in colleges were looked down upon. Today, in New York State the College of Agriculture has a prominent place among the colleges in Cornell University, and its students receive equal respect with others. The long struggle for recognition has finally been won, and farmers are coming into their own educationally. As a result, the entire nation is alive to the opportunities in agriculture, and the city has turned its face toward the country for the door of opportunity.

The wealth of opportunity in farming for the young man today is the outcome of the hard work and unpromising struggles of our fathers and grandfathers who cut down the trees, dug out the stumps, carried off the stone, cleared the fields and made farms out of the wilderness. It is well for us to stop and consider what we owe to the older farmers for their relentless perseverance in a new country against big odds, and their ability to produce and distribute the food supply demanded by a growing nation. If the older farmers with their fewer advantages, with their restricted means of communication and transportation, with their few hand tools and all the handicaps of a new industry in a new country, when every man had to solve his own problems with little or no help from outside, were able to get the results which our fathers secured, there is heavy responsibility on the younger generation to "make good" in a pronounced measure. If the young farmers with all the aids at their disposal "make good", as did the older men, in proportion to their advantages, we shall have no reason to be ashamed of the American farmer. The responsibility rests on the young farmer to improve the means at his command. To meet the demands and to adjust himself to the new methods of farming, the young man must see clearly and think straight; he must have good executive ability, as well as training and practice in well-defined business methods. He must know his business in all its details. But to know is not enough; the ability to execute must be joined to the knowledge, and executive skill is acquired only through hard experience.

The character of farming is changing rapidly. It is coming more and more to be an efficient, profitable, and attractive business. With the lessened fertility and increased demands and competition it is becoming a difficult business. It has been an easy business to skim the surface of our farms. The time has now arrived—and we have all noted the alarm with which some of our most far-sighted men view the situation—when we must expend our best thought and energy to feed and clothe our own people from lands that are no longer new. Rule-of-thumb methods will be forced out, and only the well-informed and efficient-thinking man, that is, the trained man, can succeed.

The prosperity of our farming districts and states is not alone in demanding the scientific training of our future farmers. The welfare of our cities and of our great manufacturing states is dependent upon our agricultural prosperity. It would be of inestimable value to the employees in large factory towns, for example, if the unproductive farms with which many states are still dotted could be made productive and economically valuable. City conditions everywhere would be materially bettered by increased productiveness of the sur-
rounding country, which can readily be brought about by a better training of its owners and tenants as to how to deal with their land. An interesting illustration of the success of the trained man in the poor farming districts of the south is given in one of the Leaflets issued by the Tuskegee Institute in Alabama, which tells how Mr. G. W. Carver, instructor in agriculture in Tuskegee Institute, raised 266 bushels of sweet potatoes on one acre of land with a net profit of $121, while the average yield in the vicinity was 37 bushels. Such a result must have a far-reaching effect on the farming in the community.

In New York State, one of our Cornell boys, on six acres of apple orchard, cleared 100 per cent on his money last year after deducting every item of expense and even charging the orchard’s share of taxes against it. It is the coming into the community of the trained man, who applies as searching and as diligent methods to his farming as the merchant does to his business or the broker to the handling of his bonds.

The scientifically trained man has the advantage over the man not so trained by knowing the reasons “why”. Our fathers recognized the usefulness of many an important farm practice without knowing why it was valuable. They knew a certain practice brought a certain result, and they applied the practice. That was all there was to it. Now the investigator with special means at his command works out the reasons, and with these reasons in hand is able to control the conditions to bring about the given results most effectively and most certainly.

If we read the signs aright, the very near future will see a great rise in the value of farm lands in New York State, and the less productive lands will assume relatively greater importance. All over the state there has been taking place a readjustment of farming systems, and farming practices are becoming adapted to the local conditions. The trained man, who has been given an opportunity, impossible for his father, to see these various factors and to know what types of farming are profitable under the peculiar climatic, soil and other conditions in a given region, has a great advantage and can be saved many a costly mistake. He will know how intelligently to choose a farm for the purpose he has in mind and to get one that is a little better situated than any other for the type of farming he wants to conduct. The fact that he has these advantages not enjoyed by his father is his good fortune and no reflection on the skill of his father. It is the accumulated experiences of the fathers reinforced by the discoveries of the expert investigator and placed at his disposal.

With this readjustment and with the application of well-directed energy there is money in farming, a good, comfortable income. The opportunity for the young man in farming is unmistakably there. We feel the indications of this at Cornell, when we receive 80,000 to 100,000 letters in a year, many of them from farmers asking very pertinent practical questions; and almost daily there are calls for trained men to fill good positions. The College is unable today to recommend men to fill the available positions as farm managers, herdsmen, nurserymen, gardeners, poultrymen, butter and cheese makers, teachers of agriculture in schools and colleges, and the like. This past summer we had a number of $1500 teaching positions and could not find men to take them. The majority of the graduates fitted to teach saw greater opportunities in practical farming and the salaries went begging.

It has been commonly said that colleges of agriculture educate away from the farm. Six years ago we gathered statistics as to the occupations of our former students from Cornell and found 71 per cent back on farms or in other practical agricultural occupations when they had no farms of their own. Twenty per cent more were teachers of agriculture and in government agricultural positions.
EDITOR'S NOTE.—This article is a reply to the request made to Dean Bailey by John T. Burns, Secretary-Treasurer, Dry Farming Congress, for a statement of his attitude toward the dry farming movement.

I AM convinced that the subject of dry farming has direct application to eastern as well as to western conditions. Of course, the movement is necessary and therefore worth while in its western applications alone, and in its bearing on the welfare of those regions it should appeal to all the people; but it also has a bearing on agriculture in the entire country such as our people do not yet understand.

We habitually associate "dry-farming" with dry regions; but the conservation of water lies also at the foundation of agriculture in most humid regions as well as in semi-arid regions, for the crop in humid regions is very generally determined by the pinch of the "dry spell" or drought. As the strength of a wall is measured by its weakest course, so is the crop-producing power of the year determined, under prevailing farming methods, by the poorest or least effective growing month.

Farmers in the semi-arid regions are compelled to save the rainfall, and they prepare a definite program of conservation, making this program a part of their reckoning. But the farmer in humid regions usually makes little or no allowance or reckoning for drought, and when it comes he is caught; and yet the drought and not the rainfall determines his crops. We shall never have a good agriculture until the farmer prepares for dry times and drought just as consciously as he prepares for winter. The "dry spell" of summer is usually considered to be a calamity; it is probable that a properly regulated system of husbandry would make such spells to be advantageous.

The annual precipitation at Ithaca, in Central New York, is approximately 33 inches; yet there is record of a year with a rainfall of only 21.20 inches. The average recorded yearly rainfall for the State of New York ranges from 51 inches down to 28½ inches, and if we exclude Long Island with its more uniform precipitation, the minimum becomes about 26½ inches, or approaching closely to dry-farming conditions. There are parts of the State in which the mean precipitation over a series of years is under 23 inches. I have before me the records for 48 years of one Station in Western New York, with an annual average of 27.52 inches, in which there are four years with a total precipitation of less than 20 inches (one year only 16.44 inches), and two years with a total of 20.02 and 20.61. Were it not for other aids than rainfall of the particular year (there is probably a low evaporation due to proximity of large bodies of water, and water is held in the soil from other years), this would be a semi-arid place; for a region is usually held to be semi-arid if its precipitation is less than 20 inches.

It is the precipitation of the "growing months," however, that largely determines the crop. In the dry section just mentioned, there are 26 years of the 48 in which the monthly rainfall was less than 1½ inches in one or more of the months of May, June, July, August; and there are 10 other years in which the rainfall in one or more of these months was between 2 inches and 1½ inches (which usually indicates droughty conditions). Even at Ithaca with its mean precipitation of about 33 inches (and a maximum of about 46½), there are 17 years out of 53 in which the rainfall was less than 1½ inches in one or more of these four growing months, and 14 other years in which it was less than 2 inches, making 31 years in the
(or about three-fifths of the years) in which droughty conditions prevailed. Even in a section in Western New York with a mean annual precipitation of 44½ inches and a maximum of 59½, there were 5 years out of 20 in which the rainfall was less than 2 inches in one or more of the four growing months. If to these four main growing months, were added April and September, all the foregoing figures of droughty conditions would be more marked.

Of course, the figures of rainfall cannot of themselves establish the presence of droughty conditions, or several other factors are involved; but they are the best measures that we have on record. It is certainly not too much to say that in most parts of the humid regions, the farmer may expect conditions of dryness about every other year sufficiently marked greatly to reduce his yields. We are accustomed to hear estimates of the loss occasioned by injurious insects and by diseases of animals and plants; but it is probable that the loss from "dry spells" greatly exceeds any or all other causes. Humid regions are likely to suffer most from dry weather.

Nor is it merely a question of carrying the crop over the recognized dry spells. A sufficient supply of soil moisture continuously throughout the year is a fundamental necessity of crop-growing. The acre-production must be made to increase, which means that we must be increasingly careful of our water-waste.

In the hard-land hilly regions of the East, it is not only a question of the actual quantity of water falling on the earth, but quite as much the loss of the water by rapid run-off. Within a few minutes after a heavy rain, the stream are choked and the lowlands fill up and perhaps overflow. The water is lost to one place and is accumulated in too great quantities in another place. The violent run-off is like water running from a roof. It tears the land, moves stones and other heavy objects, and carries away an immense store of fertility. Within two or three days after a heavy rain, the sides and tops of hills may be suffering from dry soil. Many of the hills of the humid Eastern States are unproductive or even sterile because they are dry. I see as much disaster from drought in New York as I see in the less humid regions of the middle west.

The discussions of the Dry-Farming Congress, therefore, should have significance to the entire country. We shall find the principles of dry-farming to be increasingly applicable to the East. In fact, these principles have been worked out in humid countries. But the present recognized methods of dry-farming are not sufficient for hill-regions, and something further must be developed. The accepted practices of dry-farming are associated with two main ideas: such preparation and tillage of the land as will catch and hold the rainfall; the perfecting of such a cropping-scheme as will make the most of the situation. These are fundamental to all water-saving practices. To these methods may be added the supplying of water, other than that of rainfall, by means of irrigation. But beyond all this, we must in time devise some mode of storing the water of rainfall on the hills of individual farms.

Many of the hills cannot be tilled with profit, certainly not by dry-farming methods; nor is it advisable to cover all of them with forest or even with other cover,—and even a crop cover could not hold the water. A method or "system" of storing water on steep hillsides was perfected and even patented by Asahel N. Cole, of Southwestern New York, in 1884, and it was made the basis of his book called "The New Agriculture." It consisted of a series of ditch-reservoirs running along the face of the hill, connecting with each other, and filled with stones and covered with brush and earth. These trenches were to catch the run-off and to hold it against the time of drought. Whether such a system is practicable, I do not know; but it is suggestive of a solution, perhaps in
simpler and less expensive form, of a
very real problem in hilly regions. It is
a problem of farm engineering. We
must make the most of our hills, in
time.

Irrigation and dry-farming are com-
plementary processes in the problem
of saving and utilizing water. Dry-
farming practices are essential to the
best results after irrigation water is
secured. Irrigation will certainly

THE NEED OF LEADERSHIP IN THE WORLD

By Joseph E. Wing.

There resides in the heart of every
man a desire to do good things,
to do brave things, worthy things.
There is not one of us who would not
like to be good, be strong, be brave,
be a hero. Why do we not achieve
more good? Why are we not braver,
stronger; why do we not live richer
lives than we do? It is because we
wait for leaders. Man alone is timid,
afraid; he loves ease and pleasure.
He may feel that there are great
goods to do in the world, great
truths to stand for, great battles to
fight, a standard of right living to be
lived, and yet he does none of these
things. He lacks a leader. There
are a thousand of us who will follow a
leader almost anywhere but few of us
who will set out alone on perilous
quests or essay to fight battles with
no strong captain in lead.

The world is full of examples.
Once Israel's army sulked in their
tents, the enemy exultant surround-
ing them; they feared, they had no
faith, no courage, they lacked a
leader. When the leader came they
awoke, arose and won a mighty
victory. Once the armies of France
were beaten, the king dismayed,
despondent, without hope. The ene-
mies of the land occupied almost
every town. Then appeared a simple
hearted girl, the Maid of Orleans,
Joan of Arc, she came as a leader,
believing that she was sent from God
to help her people. She came and
said to the discouraged armies, "you
are not beaten, you have not begun
yet to fight. Follow me." And fol-
lowing her they swept the foreign
armies before them as the wind drives
the chaff. A leader was what they
wanted. Once Phil Sheridan was 20
miles away from his army and the
army was attacked by what seemed
an overwhelming force. After a time
that army, always victorious before,
began its retreat and soon the retreat
became a panic, the army was fleeing
for its life. Then Sheridan came,
conscious of power, knowing well
what his men could do, he rallied the
men, they stood their ground, he led
them against the enemy, the flying
army became a rock, against which
the confederate force beat in vain, it
became all at once instead of an army
flying in defeat a victorious army in
full pursuit. The leader had come.
There was no more power, no more
men or guns, but the leader had
appeared.

Today there is need of leadership
as much as ever there was in the
world. We are at the parting of the
ways. Men are saying now "the old
teachings do not count today, the
ten commandments are old fashioned,
it is right to live for pleasure; the one
who wears the best clothes, who eats
best food and rides in the finest
automobile, he is the greatest of us,
the one whom we should follow."
These are false prophets, leaders who
will lead us into the wilderness and
leave us there. It is true that we
live in fortunate times when nearly
all men can have enough to eat and
good raiment to wear and some of
us can ride in automobiles but these
things do not make the man a man; do not help much in making him what he may be; do not lift his soul up above his body, above the material things of earth and make him a part of God. For that we need leaders like Elijah, we need prophets and leaders as much as ever the world needed them. There is still slavery in the world. There is still slavery to the mine, to the mill; there are tyrannical masters who ride in automobiles while their slaves, industrial slaves, wear their lives out in stifling workshops. This industrial slavery is one of the things to fight against. Then there is the ever present warfare within every man's soul, the struggle between his better and his worse self. Always, in every age, that has been the greatest struggle, the war that never ends. We are not afraid of "hell fire" any more but yet there remains the gulf between what man may be and what he is, as wide as the old conceptions of Heaven and Hell. How to live up to your higher self, how to develop the God spirit that comes to you, that whispers to you and seeks to develop in you a higher, nobler, happier, more unselfish life, that is the greatest battle today, as it always was. And in this we need leaders. And here every one of you is concerned. Every one of you is a leader to some one else. You can not live your life alone. Assuredly others are influenced by you. You can not walk down the street that you do not leave the men whom you pass better, or worse, or having met them. You shed off an influence of one sort or another. There are men who always make me a better man, just to meet them. There are men who make me a worse man. There is one thing about every great leader who has lived in the world, he has felt that he himself was led by some higher power. Elijah led Elisha because Elijah had no doubt that he was led by God. Joan of Arc led the armies of France because she was sure that she was led by angels of God. Who shall say that either of these were mistaken? Abraham Lincoln led the armies of the United States and all the people of the United States through the most bloody war that the world has ever seen, never dismayed, never doubting that he was doing right, because he felt a sense of Divine leadership that told him to go on. Can you feel that sense of Divine leadership? Can you do right because it is right and because you are unwilling to mislead those who trust you, who look up to you, who are led by you? Are you willing to consecrate yourself to a great cause? If so, many will follow your lead. What great cause remains for you to so consecrate yourself? Is there any greater cause, was there ever any greater cause than now, to lead young men and young women to live clean lives, unselfish lives, heroic lives, to lead them to walk vigorously, yet humbly, straightforward in the path of what is good, stern and unrelenting in denouncing of what is evil; serene, friendly, helpful, loving to comrades, leaders, each one of those younger, weaker, following them? Was ever there any greater cause than that? Know, then, that each of you may be a leader, that the world needs you to be a leader, that God needs you to be a leader and that if you will live as you may God's likeness will so shine out of your countenance that like Elijah of old as you pass by, other young men and young women will leave all and gladly follow you.

To fit yourself for this leadership you must learn to live aright. Sometimes you may be tempted to do this wrong act or the other wrong thing, you may reason "it does not much matter whether I do this or not" but stop, consider the effect of your life on the ones you are leading. If you live clean, if you stand straight, if you are honest, if you measure up as well as you can to the measure of perfect manhood, then all who see you will be cleaner, stand straighter, be more honest just because of you, You cannot afford to let down you must not show the white feather, you must be brave and true and fearless, must dare to live and to live aright because you are leading others and your duty is towards them.
At the beginning of a new college year the COUNTRYMAN desires to extend a word of greeting to all its friends, both new and old.

We wish to thank the faculty for their sincere interest in our welfare and the spirit of ready helpfulness which they have always exhibited towards us. We feel sure of their support.

The old students we welcome back as old friends and only wish to express the hope that you will get a little closer to us in this coming year than you have ever been before. Give us either your criticism or commendation as we may deserve, but above all, give us your help. Not only subscribe and insist upon your friends doing likewise but contribute to our numbers yourself. Come in and talk things over and give us the benefit of the excellent suggestions which we feel sure you have stored up. Look on the CORNELL COUNTRYMAN not as the publication of the eleven men who compose the board but rather as it is, the publication of the College of Agriculture, for which every one of you is in a way responsible.

To the students who enter Cornell University this fall for the first time the COUNTRYMAN extends its heartiest welcome. We are going to count on your enthusiastic support from the time you enter here until you finish your course, for without such support our publication cannot exist. First, we expect you to put your name on our subscription list and then we expect you to join the competition for the editing or managing staff of the paper and work.

After a year’s absence Dean Bailey resumes this fall the task of directing this College of Agriculture. We, the students and faculty of the College, extend him our heartiest welcome.

After a year’s diversion we hope he has returned greatly refreshed and with even greater enthusiasm, if that is possible, for the great work which he is carrying on here. In passing we must express our appreciation of the steadfastness with which Dr. Webber as Acting Director upheld the policies of Director Bailey.

Dean Bailey is known throughout the world as the leader in country life affairs, one great recognition of his ability being his appointment by Ex-President Roosevelt to the Chairmanship of the Country Life Commission. It is our wonderful good fortune that Dean Bailey has decided to remain our Dean instead of leaving for other phases of country life work. To show our appreciation let us be ready to further at all times the principles for which he stands and make our Dean feel, as he has in the past
that in whatever he undertakes he has our whole hearted support.

With Dean Bailey to lead we are confident that nothing can hold us back and that this college will not only hold its place as first among the Agricultural Colleges of the nation, but that we shall continue to grow and disseminate our teachings throughout the country until the whole world will look to New York State and its College of Agriculture at Cornell University for direction in every advancement in agricultural training and for the solution of its country life problems.

On October 6th, Governor Hughes gives up his position as Governor of the Empire State to become a justice of the Supreme Court of the United States. With the retirement of Governor Hughes from active participation in New York State politics the College loses one of its staunchest upholders.

All through his four years of service Governor Hughes has shown sincere friendship and regard for the welfare of this College. During his administration, the maintenance appropriation of the College has been increased, making it possible to extend our facilities somewhat in proportion to our rapid increase in registration; also due to his foresight and interest in the agriculture of the whole state additional appropriations have been secured for extension work.

Governor Hughes latest, and probably greatest act for our welfare was to sign the bill giving an appropriation of $357,000 with which to enlarge the College. This appropriation makes possible the erection of three new buildings.

Outside of the benefits which we have received as members of the staff and student body of this College, we have all benefitted by the stand which Governor Hughes has always taken for what was right, regardless of opposition or consequences to himself. He entered politics at a time when the state was ruled by party bosses, being the only one of the Republican candidates to be elected. This was one of the greatest personal triumphs in our political history. He leaves with the political atmosphere much cleaner and purer because of his action and example.

The CORNELL COUNTRYMAN extends to Governor Hughes the heartfelt appreciation of the New York State College of Agriculture for the very great assistance he has rendered us. We wish him the greatest success in his new field of work.
A Farm Bureau has been established as a permanent department of its work by the Binghamton Chamber of Commerce. This resulted from several conferences on the subject between Dr. J. W. Spillman, Chief of the Office of Farm Management of the Department of Agriculture at Washington, R. A. Pearson, Commissioner of Agriculture of the State of New York, Dr. H. J. Webber, Director, and other members of the faculty of the New York State College of Agriculture at Cornell University.

Development work of this nature has for several years been an acknowledged part of the work of commercial organizations in the south, middle west and western states; but the Binghamton Chamber of Commerce has been the first strictly eastern organization to direct a large part of its attention to the development of agricultural resources adjacent to the city whose business interests it is organized to serve.

Since its organization, the Binghamton Chamber of Commerce has been content to look after the credits and the interests of the retailers, wholesalers and manufacturers within the city limits; but it has recognized that the farming industry is the largest and employs the most people of any industry in the section and that it deserves attention accordingly. The Bureau will be practically recognized by the Government Department at Washington, the State Department at Albany and the State College of Agriculture in all work undertaken in farm development in the section tributary to Binghamton.

The Bureau will be under the direction of a graduate of one of the leading agricultural colleges of the country who has had four years of actual farm experience in addition to his education.

Under the direction of the State College of Agriculture a complete Farm Survey of the territory will be made which will lay bare the problems requiring attention. When this report is presented the Bureau will then direct its efforts along the lines suggested by the survey.

The Bureau will operate for a few months without cost to the farmers a Cow Testing Association for demonstration purposes. It is expected that through this work the average production of the cows in each dairy will be raised so that the farmers will see the advantages of such an Association and organize and maintain these Associations themselves.

Under the direction of the United States Government Office of farm management, the Bureau will conduct an experiment on lands in the section known as hill farms for demonstration purposes; it being the claim of the Government Department of Agriculture that the hill farms surrounding Binghamton are ideally located for production of large crops, especially potatoes; with proper crop rotation, good cultivation and fertilization.

Agencies are being established in Scotland, Holland and Sweden whereby the emigrants from those sections desiring to settle on the farms will be given either positions or furnished with an opportunity to reach farm land in the Binghamton territory.

Whosoever wants to know may ask and receive the freshest and most accurate information through the I. H. C. Service Bureau, recently established by the International Harvester Company of America.

Not only is the bureau designed to assist the farmer in a solution of his many and varied problems, by answering directly questions regarding soils, fertilizers, rotation of crops, climatic conditions, irrigation, etc., but the aim is to give assistance to students of agriculture, to the agricultural trade, and general press, and to carry on a wide and popular campaign of education.

News and agricultural data will be furnished the press and special articles will be prepared upon request of editors. Photographs of machines and agricultural products may be had for
the asking. In short, editors, teachers, farmers, and others will find the bureau ready and willing to answer any and all questions promptly and without charge.

Schools and agricultural colleges will be loaned lantern slides, as heretofore; but this service has been greatly enlarged and made more complete.

Illustrated lectures, presented by interesting lecturers, on subjects of general agricultural interest, are now being offered state and county fairs, land shows, farmers' institutes, teachers' institutes, Granges, Chautauquas, etc.

The only cheap thing about these lectures is the price. They are free. Beautiful colored slides and moving pictures have been made specially for the lectures, and no expense has been spared to make them as complete and entertaining as those for which a fee is charged.

* * *

There were in connection with the National Dairy Show two successful students' contests in judging dairy cattle. These contests have already resulted in much good for the dairy industry. It now gives us great pleasure to announce that the contest will be held again in connection with the Dairy Show, October 20 to 29, 1910; and that, in addition to the trophies usually awarded, the American Jersey Cattle Club and the Holstein-Friesian Association of America have each offered a scholarship to the student winning first place in judging the breed in which the association is interested.

For each of these scholarships four hundred dollars ($400) has been provided by the club, to be used for a post-graduate course in Dairy Husbandry, to be taken in some recognized agricultural college. These cattle clubs are trying these scholarships for one year as an experiment, and if they are pleased with the results, we hope and believe that they will continue to offer them.

Every dairy instructor and dairy student in the country should appreciate this liberal offer as a recognition on the part of the clubs that what the dairy industry needs most is more trained men. That the clubs are benefited by anything that tends towards general development of the industry is of course due to the fundamental part that pure bred cattle play in the industry.

The Ayrshire Club has not had an opportunity as yet to consider this plan; and the Guernsey Club, because of other lines of work recently inaugurated, is disinclined to take hold of the matter just at this time.

An annual scholarship representing each of our leading dairy breeds is what we are after, and our chances for getting them depend on the results of this experiment. Can not the students' judging contest at the next dairy show be made the greatest educational feature of the kind that has ever been heard of? If so, there should be judging teams from at least twenty agricultural colleges.

* * *

The recent widespread discussion of the high cost of living has aroused great interest in all phases of domestic science, and has greatly increased the demand for the publications of the Department of Agriculture on all subjects relating to food and nutrition.

The Department has recently issued a set of 15 charts on the composition of food materials; these charts are printed from photo-lithographs in six colors, and show in the case of each material the protein, fat, carbohydrate, ash, and water contents and the fuel value expressed in calories. The percentage composition and fuel value are given in figures and the relative proportion of each constituent is represented graphically. For example, in the case of whole milk a glass of milk is shown; 87 per cent of the figure is colored green to represent the water content, 3.3 per cent red to represent the protein, 4 per cent yellow to represent fat, 5 per cent blue to represent the carbohydrates, and 0.7 per cent drab to represent the ash content. The fuel value of 310
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calories per pound is represented by printing in solid black nearly one-third of a square one inch on each edge, since one square inch represents 1,000 calories. The figures given for the percentage composition of the various materials are average figures based upon as many analyses as are available in each case.

Chart 14 gives the functions and uses of food under the headings, " Constituents of Food " and " Uses of Food in the Body." Chart 15 shows the dietary standard for a man in full vigor at moderate muscular work and the estimated amount of mineral matter required per man per day.

These charts are printed on sheets 21 by 27 inches of a good quality of paper, and are for sale by the Superintendent of Documents, Government Printing Office, Washington, D. C., at $1.00 per set. The charts will be found especially useful to instructors and students in classes in physiology, domestic science, and other branches in which the food and nutrition of man is studied, either in schools or colleges, or in clubs or similar organizations.

* * *

The last National Dairy Show introduced a new class into its premium list, which promises to become an important factor in the dairy cattle world. This was the class " Cows any age having official yearly records. " There has been the feeling on the part of many that there are two classes of pure-bred dairy cattle: Those which win in the show ring, and which might or might not be profitable producers of milk or butter; and a class which are profitable producers but could not hope to win in the show ring because they lack fancy points which the up-to-date judge must require.

While not satisfied that it had fully solved the problem, the management of the National Dairy Show made the start by including the new class in its premium list. It was judged according to the following rule:

"In awarding the premium in Class 12 (cow with official yearly record), the judge shall assign each entry a definite number of points for conformation on the basis of 100 for perfect; to this shall be added one point for each twenty pounds, or fraction thereof, of butter fat above 250 for a two-year old, with an additional minimum requirement of one-tenth of a pound for each day the heifer is over two years old, up to a total of 360 pounds minimum requirement for the mature cow. Only such records shall be accepted as are certified to by the secretary of the registry association as having been made under the supervision of an experiment station or agricultural college, as required for official or semi-official tests. A cow scoring less than 87 on conformation shall not be awarded a premium."

In each breed the respective score card of that breed was used as a basis for judging conformation. In the judgment of the writer the minimum score of 87 on conformation should be lower.

To the surprise and gratification of all interested, this class brought out a goodly number of entries in the Guernsey and Jersey breeds, there being 17 entries in the former and 8 in the latter class.

It has been argued that this class was not practicable because of its interruption to its records in progress. However desirable it may be to repeat records, most breeders having gotten their cows in the official list with a year's creditable record, do not repeat and therefore having completed a year's record, their appearance in the show ring, fresh within a reasonable time, is excellent evidence that their year's record has not hurt them, if with this record they combine high individual excellence. The appearance in this class of the world's record Jersey not only hale and hearty at twelve years of age but who actually freshened during the show, was evidence of the correctness of this contention.
Since the last issue of the Countryman appeared, there has been a few changes in the staff and organization of the College which will be of interest to our readers. The most notable achievement, and one which we have long anticipated, was the establishment of a Department of Forestry. At the time this issue went to press the head of the Department had not been announced. It is confidently expected, however, that instruction in forestry will be offered this year.

Another important change which is in line with specialization in the College, was the separation of Pomology from the Department of Horticulture, and the creation of a Department of Pomology with Professor C. S. Wilson (promoted from assistant professor) in charge. Professor Tuck was promoted from an assistant professorship, and Secretary Mann was advanced to a professorship with the title of Secretary, Registrar, and Professor of Agricultural Editing. Mr. W. M. Wilson, in charge of the Weather Bureau, was given the title of Professor. E. S. Savage was advanced from instructor to assistant professor of Animal Husbandry. Professor Judson withdrew from the teaching work to give his attention to investigations, and A. C. Beal a graduate student, will assume the details of the work in Floriculture. Paul Work, of Pennsylvania State College, succeeds as instructor and investigator in Olericulture, Mr. L. D. Batchelor who resigned to accept a position as head of the Department of Horticulture in the University of Utah at Logan. The Department of Home Economics was strengthened by the addition of Mrs. Helen B. Young as instructor. There were a number of assistants added to various departments, as follows: R. J. Gilmore, assistant in Biology; G. R. Hill, assistant in Plant Physiology; H. W. Anderson and C. T. Gregory, assistants in Plant Pathology; Sara M. Bailey, assistant in Home Economics; L. M. Hurd, assistant in Poultry Husbandry; W. W. Fisk, assistant in Dairy Industry; and R. A. Mordoff, assistant registrar.

Immediately after the close of his work at the State Fair, Professor C. S. Wilson, accompanied by Mrs. Wilson, left for a trip to Washington and Oregon to study some of the western fruit harvesting and marketing methods. Prof. Wilson will give particular attention to apple packing.

Acting-Director Webber and Professor Rice were in attendance at the Graduate School in Agriculture at Ames, Iowa, during the summer, and delivered lectures. Prof. Rice remained for the full session.

During the early part of the summer Instructor and Mrs. Guthrie took an extensive trip through the central west, getting as far south as Oklahoma.

A small but exceedingly useful little volume entitled, "Laboratory
Exercises in Farm Management," by G. F. Warren and K. C. Livermore, has recently appeared.

A real estate epidemic has attacked the staff of the College of Agriculture this summer with the result that Assistant Professors W. A. Riley, Crosby and Love have built themselves homes. Mr. Savage has purchased a home, and Assistant Professor Ross, Miss Rose and Miss Van Rensselaer have purchased lots for building. Dr. Webber has made extensive alterations on his house.

Assistant Professor Love's home has been invaded by a very small daughter since we saw him last.

Mr. G. E. Burnap, of the Department of Rural Art, has resigned his position to accept a very important appointment in connection with the park system of Washington, D. C. The COUNTRYMAN wishes him success in his new work, for which he is eminently well fitted.

Toward the end of the summer the new greenhouses were turned over to the College for use. They have been very much needed, and will add greatly to the efficiency of the teaching and investigation of the departments concerned.

Our Dean Bailey is constantly in demand to take the leadership in some new public service. The latest distraction has been the use of his name in the public press as the candidate for the National Congress from this district. In reply to the newspaper agitation, he very characteristically states his well reasoned position as the representative of the farmers of New York State: "I am not a candidate for Congress or any other office. I intend to exercise what capabilities I may have along different lines, and I will never violate my trust with the farmers by dragging their issues to the political arena."

Prof. Publow of the Dairy Department has resigned and is now in commercial work in Canada. Mr. W. W. Hall will take charge of the instruction in cheese making this term. Mr. Hall gave all cheese teaching here for many years but was forced to retire two years ago on account of ill health.

A new steam sterilizer has been added to the market milk room. A new four-horse boiler and engine has also been installed to demonstrate the type of boiler suited for creamery work. Some necessary equipment has been added to the farm dairy room.

The following men from the Dairy Department acted as judges at the New York State Fair at Syracuse: Prof. Publow, judge on cheese; Prof. Guthrie, judge on butter; Prof. Stocking, judge on milk and cream; Mr. Ayres, judge on butter scoring contests.

The exhibit of the Dairy Department was shown at county fairs at Whitney's Point, DeRuyter, Boonville, Warsaw, Watertown, Greene, Syracuse, Ogdensburg, and Binghamton.

The Intercollege regatta held last Decoration Day on Cayuga Lake, after the Junior Varsity race between Cornell and Pennsylvania, resulted in a victory for the crew of the College of Agriculture. The race was well rowed, the absence of splashing and "crab catching," so prevalent in former years, being especially marked. Great credit is due to our crew for their hard consistent work which resulted in the capture of the much coveted crew trophy.

By the signing of the bill by Governor Hughes the College of Agriculture received an appropriation of $357,000 to be used in the extension of the College. The bill authorizes the construction of a building for general
class room and laboratory purposes, including an auditorium at a cost of $113,000, a poultry husbandry building to cost $90,000, and a home economics building to cost $154,000. At present writing the sites for these buildings have not been definitely decided upon.

The nine members of the advanced Stock Judging class, accompanied by Professor Savage, judged the livestock at the Chemung County Fair held at Elmira, Sept. 19-24. Three members of the class also did judging at the Mansfield Fair, Mansfield, Pa. The members of the Advanced judging Class are now competing for a place on the team, consisting of three men who will judge in the contest at the National Dairy Show at Chicago, October 20-29.

Professor A. W. Gilbert of the Department of Plant Breeding was married on June the eight last, to Miss Susan Grace Cooper. The wedding took place at the bride's home in Lansing, Michigan. Mr. and Mrs. Gilbert are now living in the Wycoff apartments on Fall Creek Drive.

Acting Director Webber has received from Governor Hughes a draft of the bill giving the College of Agriculture an appropriation of $357,000 with which to erect three new buildings. Accompanying the draft was the pen with which Governor Hughes signed the bill. These will make a valuable addition to the trophies of the College.
FORMER STUDENTS

'02, B. S. A.—On Sept. 3d, Mr. Ralph W. Curtis, ’02, and Miss Allie Myrtle Pettigrew were married at Jamaica Plain, Mass. They spent their honeymoon down on the Massachusetts coast. Mr. Curtis has an important position at the Arnold Arboretum of Harvard University. His host of Cornell friends extend to him and Mrs. Curtis, heartiest good wishes.

'07, B. S. A.—E. C. Ewing of the United States Bureau of Plant Industry is now engaged in bionomic investigations at Victoria, Texas.

'08, B. S. A.—William E. Harries has been temporarily appointed landscape architect in charge of the physical aspect of the New York State Reservation at Niagara Falls. His address is State Reservation, Niagara Falls, N. Y.

'09, B. S. A.—Frank E. Wurst was married to Miss Dora Pauline Warner, daughter of Mr. and Mrs. Wendell C. Warner, of Springville, N. Y., on June 8.

'09, B. S. A.—Edna M. Jenkins was married on June 23d, 1910, to Mr. A. D. Hoose at Duane, N. Y., where they are now at home.

'10, B. S. A.—F. B. Kelly has resigned from his position as manager of a fruit farm at Covert, N. Y., and is now connected with a nursery in his home town, Newark, N. Y.

H. S. Jackson, A.B., '05, has been appointed Professor of Botany and Plant Pathology in the Oregon Agricultural College, Corvallis, Oregon. Mr. Jackson was for three years Assistant Plant Pathologist in the Delaware Agricultural College Experiment Station. He was Fellow in Botany at Harvard University in 1908–1909. During the collegiate year of 1909–1910, he has been Assistant in Plant Pathology at the Oregon Agricultural College Experiment Station.

'08, B.S.A.—Vincent Phelps, who owns a large fruit farm near Kingston, N. Y., was married on July 14, 1910, to Miss Belle Louise Andrews, at the home of the bride’s parents in Middle Hope, New York.
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<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
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<tbody>
<tr>
<td>1,548,514</td>
<td>Apples and Crabs</td>
</tr>
<tr>
<td>269,329</td>
<td>Pears</td>
</tr>
<tr>
<td>166,151</td>
<td>Cherries</td>
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<tr>
<td>193,261</td>
<td>Plums</td>
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<tr>
<td>257,782</td>
<td>Peaches, Apricots and Nectarines</td>
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<tr>
<td>31,530</td>
<td>Quinces</td>
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<tr>
<td>270,474</td>
<td>Ornamental Trees</td>
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<tr>
<td>276,516</td>
<td>Evergreens</td>
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<tr>
<td>165,518</td>
<td>Hedge Plants</td>
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<tr>
<td>227,912</td>
<td>Grapes</td>
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<tr>
<td>170,115</td>
<td>Currents and Berries</td>
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<tr>
<td>603,000</td>
<td>Asparagus</td>
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<tr>
<td>20,000</td>
<td>Rhubarb</td>
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<tr>
<td>115,315</td>
<td>Shrubs, Bulbs and Perennials</td>
</tr>
<tr>
<td>108,169</td>
<td>Roses</td>
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</tbody>
</table>

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Much has been said within the last few months on the subject of rural leadership. It has found its way into discussion, in the press and on the platform, and was strongly emphasized in the report of the Country Life Commission. The discussion of leadership raises the question as to the matters which need leadership, for every real leader must have a real cause, and if there is a demand for rural leadership there must be rural conditions which need to be changed. The call becomes a symptom of the condition of affairs, and in order that the call may be clearly understood and fully embraced, it is necessary that there be a full appreciation on the part of all persons involved of those conditions which need to be improved or changed and the inter-relation of the means to that end.

It is acknowledged in many quarters that rural conditions are not in the perfect adjustment which one desires. They are not effectively meeting the demands upon them along economic, social or spiritual lines. Probably most attention has been given to their economic limitations. The situation is not so much that the land is producing markedly less than it has produced, or that it is incapable of producing more, but relative to the demand for produce, and to the living standards of the country they are inadequate. It does not seem to us possible to fully appreciate these conditions except they be viewed in their historical development.

The American states have developed primarily as agricultural communities, consequently pioneer interests centered chiefly in agricultural industries and in the institutions which developed with the conditions of the times. The expansion was extensive and, therefore, met the demand for more products and more business by increase in area rather than in intensity of production and economy in method. In this statement one must be understood generally, since there are local sections to which this will not apply. But in general there has been no real intensive farming on the American continent. Land was new, it produced generously and labor was abundant to meet the seasonal requirements; there were few large cities, relatively little manufacturing, and no labor organizations. The bulk of the population resided on farms or in rural villages. Consequently, the general social outlook was toward agriculture and agricultural things, and the great surplus of products of the soil left undisturbed the question of supplying food for future generations and raw material for their other needs.

Gradually, cities grew, and with them manufacturing, transportation and mercantile activities expanded. The continued extension of the farming area to better and more easily farmed lands than the original area, together with the relatively small demand for produce, kept prices so low that over large sections of the country, especially older sections in
the east, farming gradually became unprofitable and land values lost that increment of appreciation open to the pioneer. The conditions of the times directed attention toward the city and toward the new lands of the west, to the disadvantage of the older sections.

At the same time that city population and opportunities were growing, organizations,—capitalistic, labor and social—were developing rapidly; more rapidly than in the country district, until they gained the ascendancy and occupied the center of the stage. Attention continued to turn in the direction of the city until the standards of the country, instead of being dominated by their own situations, were dominated by the ideals of the city. This has been the condition for the last score of years or more. The farmer and the rural community found their interests disadvantaged by their better organized city correspondent; they found their farming operations not sufficiently remunerative, their labor conditions unsatisfactory, — inadequate; their social structure crumbling, their family dissatisfied, their schools teaching polar geography and the mathematics of the merchant, and the country church falling into decay. These institutions, the family, the social life, the school and the church, rose and fell together, being in a large measure interdependent.

While all these transformations have been occurring, a new situation has developed,—a new and profoundly important condition has come into being. The agricultural land area of the country has essentially ceased to expand, while increase in population and, therefore, demand for produce has gone on in geometric ratio. The attention of the nation has been called to the possibility of a deficient food supply and of raw materials of the soil at a no distant date, and as a result of this, and before the open country can adjust itself to the new situation, prices of food to the consumer and of raw materials to the manufacturer go mounting upward in price to a standard which is partly real and partly artificial. This is the status to-day, and these are the conditions which the rural leader of the immediate future is called upon to correct and adjust in a satisfactory manner. It is the problem of making country life efficient and satisfying, and if it is to be efficient and satisfying it must be well organized, it must be profitable, and it must have a social life of its own. There must be institutions of the country, for the country and by the country. The standards in the city and its institutions are not applicable, or, at least, they must be readjusted to rural conditions.

It has been said that every institution is a monument to a man—a personality. It is, therefore, a monument to a leader, and leadership may be defined as insight plus initiative. There must be insight into the really fundamental conditions which exist, and remedies by which they may be corrected, and there must be initiative to effect the correction. The men and women with insight into the condition of the farm, the village, the rural school and the rural church, and with an effective plan of operation are in demand. Many remedies have been proposed for the illness of the country, for it is really an illness, an unhealthy condition, and like every disordered condition it needs to be healed by eliminating the cause or causes, and as in medicine so in these problems, there are differences of opinion as to the remedy to be applied. But, nothing can be better than an exchange in points of view of the persons concerned with these matters, and out of the multiplicity of advice will come the wisdom which will bring health to our social body. Little worry need be given the abortive suggestions and effort which are put forward from time to time, for in the end good counsel will prevail and right methods will be employed. The country will spring up with new life and the institutions and the people of the country
will come into their own, which means a reasonably profitable business organization, a sense of justice and independence and a spirit of social satisfaction.

Five primary lines of improvement appear to us to be essential and they must be carried along as one unit, for the efficient application of one depends upon the presence and efficiency of the other. There must be, first, exact knowledge on the farm of the processes by which plants and animals are produced. Second, there must be a more effective organization of the business end of farming. Third, there must be a more satisfactory social organization of country folks, which shall give the maximum of social advantages to all the people in the country. Fourth, external hindrances to the proper development of country life and the country itself, must be removed. And, fifth, a new and more spiritual animus must be imparted.

Considering these improvements somewhat more in detail, it is apparent that, first, all agriculture deals essentially with the production of plants and animals from the soil. It is, therefore, self-evident, that an understanding of the principles and processes which underlie such practices should be the guiding spirit of the farm. The manager must first know how to get bigger crops and better animals. He must have technical training in the arts of production. This means the general dissemination of technical training and of those arts and sciences which bear on agricultural pursuits. It opens up the policy of scientific research and of broad professional education in their fundamental relations.

Second, business organization has for its object a union of land, capital, knowledge of the processes of production, capacity for the management of labor, and ability to market for the largest profit. In these, farming has been deficient. Its system has not been well knit and effective, and this lack has often led to the continuance of operations long beyond the point where they should, and according to economic laws would have ceased. There has been great waste on the farm, often justifiably, and only a prodigal nature could have stood it thus far. Farm organization bears a vital relation to the point next to be taken up, the social organization, because the social organization is dependent upon it. The business organization will largely direct the movements in the other lines of improvement which have been mentioned; especially must it bring to bear technical knowledge and create such a social structure as will relieve the present farm labor problem. No one system of farm organization is universally applicable, but in each case it must be adapted to the soil and to the markets. Likewise, the business organization must be the effective means in removing the external disadvantages in the farm operations so that they get the square deal.

Third, the rural social organization must provide for satisfaction in country living; it must have a sufficient income basis to provide school facilities for young and old and social intercourse for all classes, and an elimination of those rural living conditions which cause retirement from the farm to the city. Roads, schools, rural delivery and social institutions enter into this problem.

Fourth, it is agreed that the farming community is often disadvantaged by external conditions, over which it has little control, such as distribution of the consumer's price, the financing of farming operations, transportation facilities,—including the parcels post, rural delivery and good roads—and tariff discriminations. All these, so far as they bear on the farm situation, must be corrected.

Fifth, much has been said of the rural church. Its financial and numerical weaknesses have been remarked. Both of these indicate spiritual weakness. In the development which has preceded, the spiritual life has been
mentioned last, not because it is regarded as least important, but because it is the final object of all the others. As a matter of fact, it is the basis of all the others, for without an adequate spiritual foundation there can be no dependable social or economic superstructure. In the past the country has been lauded as the conservator of independence, the reserve of fresh, pure, honest blood from which the city was recruited. From it have come up many of the notable leaders. But we venture the opinion that, at the present time, speaking broadly, the so-called independence of the country is largely the false independence of ignorance and that there is much of moral weakness in the country. Men or women get their stability of character from their worldly wisdom plus their spiritual faith. These make up their character and it is character that counts. Character in the last instance is the quality of acting right. Every leader must have character. They must have insight to act at long range with accuracy. The whole movement of higher education is rightly expressed by the Rev. Dr. Elliot as "the translation of sight into insight." Many men see the present situation, at least its outposts. Some, perhaps, see through these outposts, that is, having an insight into their meaning. Truly education is the development of effective insight. It may even be suggested that the weakness of our economic system, both city and country, and the many diseased spots of graft, and crime which it exhibits, are simply a measure of its spiritual depth or lack of depth. If there can be instilled into the social body a deep philosophy of life which is all inclusive and which correlates the relation of one part with the other, shows their interdependence, and shows that the injury of one is the injury of all,—until such a depth of understanding has become fairly general, there will not be general justice, there will not be stability, there will not be efficiency. The call for rural leadership is a call for the man who comes with an appreciation of all these elements, and who is able to build them into practice in new institutions of the country.

ARE OUR INSECT FOES INCREASING?

By Glenn W. Herrick

Assistant Professor of Economic Entomology, Cornell University

We often hear our seniors say, "Why I can remember when we didn't have any bugs to fight in this country." "I can remember when there were no potato bugs and when our cherries never had a worm in them and when we used to get apples out of father's orchard without a speck on them or a worm in them." Is this true in fact or is it largely due to the rosy memories of a hungry boy dimmed by the passage of many years—memories of a boy who could eat Baldwins from the tree in June and wormy apples by the dozen and call them good?

Away out in Western Texas in a jittle valley following a beautiful stream up between two magnificent spurs of the Davis Mountains and known as the Toyah Valley, apples, pears, grapes, and alfalfa, grow in their pristine profusion and perfection. Insect pests are unknown and the apples and pears are immense in size, perfectly free from knots or blemishes and as smooth and shapely as the cheeks of a child. It is a new country, practically untouched as yet by the disturbing elements of human civilization. Such is the experience of every new country, and such were the conditions in the fruit sections of New York State when they were first planted; but the conditions are certainly not the same to-day. It is safe to say that there are a dozen fruit pests in Western New York to-day
that were unnoticed or unknown thirty years ago. One has only to recall the San José scale, blister mite on apples, grape root-worm, and red-bug on apple, to be reminded of the truth of the foregoing statement. It is interesting to note the manner in which some of these new pests have originated. It will help us to answer our question, "Are our insect foes increasing?"

Out of 73 of our worst insect pests, 37 or over half of them have been imported from foreign countries. The three worst pests now menacing the agricultural interests of the United States, namely, the gipsy, and brown-tail moths and the Mexican cotton boll weevil are all comparatively recent importations from foreign countries. The gipsy moth was introduced in 1869 by a French artist and naturalist who was carrying on some experiments at Medford, Mass., in the production of silk. Some of the moths escaped from his cages and from these the pest has gradually increased and spread until it has become a most serious enemy to the agricultural interests of New England. The brown-tail moths were probably introduced not far from 1890 by a nursery in Somerville, Mass., on roses imported from France and Holland. The Mexican cotton boll weevil came into the United States about 1892 from its original feeding grounds in Mexico. The San José Scale, the widely known pest of fruit trees, the codling moth, the parent of the ever present "worm" in apples, the Hessian fly in wheat, the common cabbage worm, the "green-bug" or wheat louse, the angoumois grain moth, the croton-bug and "buffalo-moth" in dwelling houses, and other common pests, many of them totally unknown to our fathers, may be cited as foreign insects that have entered this country and have become our most inveterate foes. But we can not by any means, impute all of our new insect troubles to those pests imported from other countries. We are constantly and unwittingly creating troubles of our own in this line. The Colorado potato beetle is an interesting and illuminating case in point.

Prior to 1850 the Colorado potato beetle was confined to the Eastern slopes of the Rocky Mountains, notably in Colorado, where it fed upon its wild food plant, the sand bur, a close relative of the Irish potato. With the western advance of civilization, accompanied by the cultivation of the Irish potato, the beetle spread from its original food plant, the sand bur, to the potato on which it threw prodigiously. It had suddenly found a tender, succulent food plant, eminently suited to its taste and conveniently growing in large patches, extending from Colorado to the Atlantic and south to the Gulf. Nothing was more inevitable than that this insect should gradually extend its territory to coincide with its now popular food plant. From 1868 to 1870 it entered New York State and has since remained as a pest with which we must yearly contend. Thus we find that insects once unknown as injurious suddenly become serious pests through the disturbing influences of man.

The natural food plants of the common white grubs are the different grasses. In the pasture lands and in many of the older meadow areas of this country will always be found more or less of these larvae of the June bugs. When an old pasture or meadow is plowed and corn is planted on the sod, injuries from white grubs are very liable to become serious. So long as the food plants of the June bug larvae stand on the soil in abundance, the grubs will thrive and multiply, but their injuries may remain wholly unnoticed. On the other hand, when the grasses, standing thick on the ground, are destroyed by plowing, and corn is planted here and there instead, the ravages of the grubs often become prominent and widespread. The number of grubs remain practically the same but the food plants are tremendously reduced in number, con-
sequentiy the injuries become very much more noticeable and serious. It is simply another case in which man has unwittingly destroyed the balance in nature and brought troubles upon his own shoulders.

Undoubtedly, insect foes are increasing. It is an inevitable result of the destruction of our forests and the bringing of much of this virgin soil under cultivation with the consequent disturbance of the normal conditions of insect life in those areas. It is the result of the wholesale destruction of our birds for food, millinery purposes and so-called sport; of the increased population and wider occupation of the land by which many of the small animals that normally aid in holding insects in check have been driven away or destroyed; and of the importation of foreign plants and animals as we have graphically pointed out. In short, it is the inevitable result of the march of civilization by which general and profound disturbances of the forces that tend to hold the balance in nature have been brought about.

MEAT PRODUCTION ON CHEAP FARM LAND

By M. W. Harper
Assistant Professor of Animal Husbandry, Cornell University.

DURING the past few months there has been much discussion on the high cost of living, and many theories advanced as to the cause and means of relief. It is not the purpose of this article to suggest causes or remedies, as there are sufficient ideas extant at present to cure almost any ill that might befall our Republic. Some of these ideas would be most amusing were it not for the source from which they come. Recently it has been suggested that we convert our cheap land into numerous potato patches and feed our people on Irish potatoes, yet at the very moment this suggestion came to public notice, potatoes were the cheapest article of food on the market. This suggestion carried with it the idea of dividing the land into small farms, yet it came from a man who fully appreciates the efficiency of combining small railroads under one management, and thus saving much duplication of labor. It is therefore not our purpose to add one more idea to this already too long list.

Because of the high price of meat it does seem worth while to briefly review existing conditions along the line of meat production. Most of the meat—beef, pork and mutton,—produced in the United States comes from the corn belt which includes the area lying west of the Sciota river, north of the Ohio river and east of the Missouri river. Throughout this region corn can be more cheaply grown than anywhere else in the world. Corn being king of meat producing foods, this region naturally became noted for the production of meat. This led to stocking the area with meat producing animals,—beef cattle, mutton sheep and swine. Carrying the breeding stock of these various classes through the summer season made a heavy demand for permanent pastures and a few years ago much of this corn belt was down in permanent pastures. During recent years, however, the high price of grain has induced the farmers to plow up their pastures and raise more grain. With no permanent pastures available, the corn belt farmers believe that they cannot keep breeding stock simply to raise calves and lambs to fatten for the market. Hence much of the breeding beef cattle and mutton sheep that formerly pastured throughout this region have disappeared. This in turn has reduced the supply of feeding animals.

Formerly, it was possible to pick up a carload of desirable feeding cattle or sheep, uniform in age, color,
type, breeding, condition and quality. In recent years the conditions of farming have changed so much that this is no longer possible throughout the corn belt. The supply is limited because land suitable for grain farming has advanced so rapidly in value that it is not thought profitable to keep it in permanent pastures. A greater revenue per acre can be obtained at present by growing corn. Then too, a large proportion of cattle and sheep feeders have retired from their farms, moved to town and are renting their farms. Under prevailing conditions a renter cannot afford to stock a farm, as his lease has to be renewed annually, while the man who produces cattle or sheep must necessarily be able to live on the same farm throughout a series of years. The exceptionally high prices paid for butter during the last few years together with the increased price for veal calves have tempted many farmers to sacrifice a good beef calf as veal, and milk an unprofitable cow. Not only has the supply of beef animals diminished, but the quality has declined, due to the fact that a large majority of farmers keep just enough cows to supply their families with milk and butter. The result is that cows have been selected which show marked dairy form and characteristics rather than the beef type and conformation. As the cows are kept to supply dairy products, it is preferable to have them come “fresh” at different times in the year in order that the dry cows may be replaced by fresh ones. The calf crop is thus very uneven in size. Little attention is paid to the kind of sire used, as the calves being considered of little value, are generally sent to the butcher as veal. Frequently beef, dairy and scrub cattle may be found in the same herd. These mated to the same bull at different seasons of the year bring forth a calf crop lacking as much in uniformity of age, breeding, type, conformation and color as it is possible to conceive of.

During this decadence of meat producing animals in the corn belt, there has been a steady increase in the demand, and as no other area has stepped forward to meet the demand, the price of meat has steadily increased. Unless meat goes still higher, there is little likelihood of the corn
MAKING MUTTON ON PASTURE.

belt again embarking into the business of meat production as grain farming is more profitable. This brings up the question as to who is going to supply our people with meat. There are vast areas of land in the country unsuited for grain growing, which can be very profitably utilized for permanent pastures. In fact, much of the farm land east of Sciota and south of the Ohio rivers is suitable for permanent pastures. This cheap land, much of it, could be laid to permanent pasture and yield a very creditable return as pasture for beef cattle and mutton sheep. In fact if conditions continue in the future as in the past, much of our beef and mutton must come from these cheap outlying lands. Of course if this is attempted, the care of the pasture must receive much attention.

The pasture crop is perhaps the most neglected of farm crops at the present time. Many pastures that are now supporting one animal to two or three acres can, with proper care, be made to support twice the number of animals. First, secure a good stand. Many pastures do not now possess more than one half a crop, and it is obvious that such pastures cannot produce a good yield. Blue grass should form the basis of all permanent pastures, but should be reinforced by White clover, Orchard grass and Red top. The pasture should be harrowed and reseeded each spring until a stand is secured. Second, keep down the weeds. Animals eat the grass and leave the weeds, hence unless something is done to keep the weeds down, they soon take possession of the pasture. To obviate this, pastures should be mowed twice each year. This is important and should not be neglected. It not only keeps the weeds down, but keeps the pasture in such condition that the animals will feed more evenly over the entire field. Animals are likely to feed where the grass is rather short and tender and leave the ranker growth. Mowing obviates this. Third, drain the pastures well. Good pasture cannot be secured without proper drainage. This is often entirely neglected and the parts of the farm that are too wet to grow other crops are left for pasture. Fourth, top dress permanent pastures with manure when
convenient. Oftentimes corn stalks or straw scattered over the north slope when the land is broken will materially improve the pasture. Another factor which often reduces the total yield of a pasture is the fact that the animals are turned to grass too early in the spring, which injures the growth of the young plants before they get a good start, whereas if left a week or two longer they would return a much greater total yield. Pastures thus treated will increase in value with age as has been practically demonstrated as far east as Central New York and as far west as Western Missouri, where there are pastures varying in age from one-third to one-half of a century and are now supporting one animal to each acre from four to six months each year without extra food and supporting two animals an equal length of time when grain is fed in addition.

Fattening cattle and sheep on pasture is much more profitable than winter feeding and is much more generally practiced. By feeding in summer on pasture the labor is reduced to a minimum, there is no handling of bulky foods, no bedding to provide, no lots to clean of manure, and no extra outlay for an expensive plant such as sheds, lots, and the like. Approximately the only labor in summer fattening is that required to keep the fences in repair.

There are two methods of fattening animals on pasture; pasturing alone with no grain, which is called grass fattening, and feeding grain in addition, oftentimes all they will eat in connection with the pasture. Which of these methods should be employed will depend on conditions. When land is cheap and there is an abundance of pasture, one may secure fairly good returns from pasturing without grains. True neither prime beef nor prime mutton can be made on pasture alone, but with the proper kind of animals a very creditable grade of meat may be produced, and at a very nominal cost as the animals have been bred, grown and fattened on cheap land. Such meat would readily be taken by the consumer which would serve to relieve the situation so far as high priced meat is concerned and at the same time the cheap farm lands would be increased in fertility and value.

A GRASS-FAT BULLOCK.
FOR some years past it has been the custom of writers on hygiene and particularly of those discussing the question of health in rural communities, to dwell on the dangers lurking in the waters of the farm well. These enthusiastic sanitarians have so magnified the dangers arising from the pollution of the soil in the vicinity of a well and the possible contamination of the water by such soil pollution that they have persuaded not only themselves, but many other credulous persons that the clear sparkling well water, used without any bad effects for years, is really a source of disease and death. As a matter of fact, it has been very difficult to produce any data that will substantiate the alarming claims of these writers. Occasionally there is evidence to show that typhoid fever has been caused by the water of a polluted well but in such cases the opportunity for contamination has been so manifest and the carelessness or indifference of the owners of the property so flagrant, that the contamination occurs as a necessity rather than as an incident in the use of wells.

Studies which have been made on the life of the typhoid fever germ in the soil show clearly that it is easily destroyed and that its passage through the soil particles is very difficult. An exception to this occurs when the germs are deposited in the ground within a current of water which flows into the well. Apparently the germs are carried in running water just as leaves or chips carried in a brook and under these conditions pollution may occur when its origin is one hundred feet or more away. If the germs are deposited on the surface of the ground or in the upper layers of the ground above the point where they can be acted upon by sub-surface streams, the chances of their being carried into the well are very slight indeed.

It follows, then, that if the well is protected at the surface of the ground, the greatest source of danger to the quality of the water is eliminated. This can easily be done by thoroughly cementing the masonry of the well from a point about six feet below the surface up to the surface and then extending the well walls above the ground for a distance of at least a foot. Occasionally one sees a well built in this way. The soil around the well has also been carefully graded away from the masonry so that the surface water does not have a natural course into the well but is led around and away from it. This properly built well also has a watertight concrete cover, extending out over the walls so that waste water from the pump, carrying, in many cases as it does, dirt and filth from the boots of the man drawing the water, shall not fall into the well but shall be carried away. With such a well, the danger from typhoid fever is very small and it is most untrue to say that the farm well is responsible for the excess of typhoid which occurs in the rural districts. A noted English authority on water problems says that he has never been able to find any cases of typhoid fever caused by well water where the contamination had to percolate through several feet of compact soil before reaching the suspected well water.

If it is not true that the farm well is responsible, neither is it true that the rural districts have more typhoid fever than city districts. The following table based on figures published by the United States Census Bureau shows the average death rate from typhoid fever in the cities of the United States and in the rural parts of the United States, the figures given be-
Registration Cities .......... 36.5 33.9 37.5 38.2 35.2 30.1 34.2 32.9 25.8
Rural part of Registration States ............... 34.6 18.8 27.0 24.7 23.8 23.0 28.6 26.0 24.3

ing deaths for each 100,000 population. In this comparison the rural parts include all the population in villages and cities of less than 8,000 population.

This table shows without question that the death rate from typhoid in the country is less than that in cities.

There is, however, a point of concern which may be brought out by further study of these same statistics, better shown, perhaps, in the case of New York State. In the following table which shows typhoid fever death rates per 100,000 population for the years 1901-1908, it is to be noted that the death rate in the large cities is decreasing, somewhat irregularly, but on the whole it is markedly less at the end of the period. In the case of rural population, however, this does not appear, the death rate to-day being practically the same as ten years ago. This indicates that the knowledge of sanitary matters is gaining ground in large cities but not as yet, to the same extent, in rural districts.

Year. 1901 1902 1903 1904 1905 1906 1907 1908
Average of City Population ...... 38.9 33.9 43.0 40.3 32.2 30.5 32.1 24.1
Average of Rural Population ...... 20.3 23.2 21.3 22.3 21.3 19.9

Another interesting phase of the subject is that neither in the large cities nor in the country is there to be found the largest number of typhoid fever cases, but in the small city. This is because the small city has many of the unsanitary conditions belonging to city congestion without the efficient sanitary administration which belongs to the large city. In New York State, New York City shows a constantly decreasing death rate, decreasing from 20.4 per 1,000 population in 1898 to 16.8 in 1908. In the rural districts outside of New York City, the death rate in 1898 was 14.5 and in 1908 it was 15.5—an increase rather than a decrease, illustrating, again, the greater advance in matters of hygiene in the city.

The small city of from 3000 population upwards, is altogether the most dangerous community in which to live so far as health is concerned and particularly is this true in the case of typhoid fever diseases. The most conspicuous outbreaks of typhoid fever which this country has ever known have been in cities of this type—cities in which a water supply has been installed but cities in which a sense of irresponsibility for the purity of the water, coupled with a dislike to expend money for its protection, has allowed the water to become polluted so that an epidemic has followed.

Nor are conditions better without a public water supply. In the country there is room enough so that organic matter deposited on or in the soil is taken care of by the natural purifying agencies. In the small city, where the land is all divided into lots and where on each lot there must be located both a well and a cesspool, the ground becomes saturated with filth, the natural purifying agencies of the soil are swamped or drowned in their vain attempt to take care of the constantly increasing amount of pollution, and the wells become infected because the ground itself has become a hot-bed of germs. The writer could cite instance after instance where typhoid fever has repeatedly broken out, not because of any specific infection in any particular well, but because the ground water as a whole has become infected from the accumulations of filth in the soil.

The remedy is obvious. The small city should provide itself with a public water supply, not depending upon wells. It may sometimes be easier and cheaper to provide a sewer system than a water supply and if the sewage is removed from the
community the wells may continue to be used; but with houses close together and on small lots, to expect a community of any size to pour filth into the soil and take pure water out of the same soil is unthinkable.

Nor is it always sufficient to provide a water supply. Constant care and supervision must be exercised to maintain that water supply in a state of purity. If the water comes from the surface of the ground, as from brooks or streams, an inspection of the watershed must be made regularly in order to make sure that no pollution is finding its way into the stream. If the water comes from the springs, due care must be taken to see that the springs themselves do not receive surface wash. If the water comes from wells the safety of the supply is generally assured but an occasional analysis of the water should be made in order that any unexpected or unforeseen pollution may be discovered.

As a conclusion, then, it may be said that the danger of living in a small city or village comes from the crowding together of population and that the dangers incident to this congestion are not removed largely because the residential rural community are unwilling to spend the money necessary to protect themselves. It is a pity that such shortsightedness can exist and it must be left to the broader-minded and perhaps younger members of the community to combat and overcome this conservatism.

PLEA FOR NEW COUNTY FAIR

By L. H. Bailey

Address to students Oct. 13, 1910.

THE county fair has not changed its general basis of operation in recent years, and yet the basis of country life is changing rapidly. There are many county fairs that are doing excellent work and are worth to the people all that they cost in effort and money; but the method or system as a whole is inadequate to the present-day conditions. The whole basis of the county fair is insufficient for the epoch that we are now entering. I would not discontinue the local fairs. I would make them over.

The fairs have been invaded by gambling, and numberless catch-penny and amusement and entertainment features, many of them of a very questionable order, until they often become great country medleys of acrobats, trained bears, and high divers, and gew-gaws, and balloon ascensions, and side-shows, and professional traveling exhibitors and advertising devices for all kinds of goods. The receipts are often measured by the number of cheap vaudeville and other “attractions” that the fair is able to secure. And as these things have increased, the local agricultural interest has tended to drop out. In New York, the state makes appropriations to local fairs: it is a question whether the state should be in the showman business.

I should like to see one experiment tried somewhere by some one, designed to project a novel and bold enterprise on a new foundation. It would first be necessary to eliminate some of the present features, and then to add a constructive programme.

I would eliminate all gate receipts; all horse trots; all concessions, and all shows; all display of ordinary store merchandise; all sales of articles and commodities; and all money premiums.

Having taken out the obstructions,unnecessary, and excrecescences, I would enter on a constructive programme. I should then begin to make a fair. I assume that the fact that a person lives in a community, places on him responsibilities for the
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A FARMER'S COUNTY PICNIC, A FEATURE WHICH DEAN BAILEY WISHES TO MAKE MORE PROMINENT AT THE COUNTY FAIR.

The welfare of that community. We should make the county fair one of the organized means of developing this general welfare. Therefore, I should assume that every citizen in the county, by virtue of his citizenship, is a member of the county fair and owes to it an allegiance.

It would then devolve on the persons who are organizing and operating the work, representing the fair association, to develop in him his sense of allegiance and co-operation. I should not discourage any citizen of the county from co-operating in the enterprise, or allow him to escape his natural responsibilities, because he felt himself unable or unwilling to pay an admission fee, any more than I should eliminate any person because of religion, politics, color or sex.

Of course, it requires money to run a fair. I should like to see the money raised on the principle of "tag day." I should like to have it said to every resident in the county that he and his family may come to the fair without money and without price; but I should say to him also that money is needed, and that all those persons who wish to give a certain sum would be provided with a tag, which would absolve them from further contributions for the year and which would admit them and family during the entire fair. I suspect that more money could be more easily raised in this way than by means of gate receipts. I should have this money collected by means of an organized effort through all the schools and societies in the county, setting every one of them at work on a definite thing.

Of course, the state or other agency, could contribute its quota of funds as heretofore.

In other words, I should like to see, in this single experiment, a complete transfer from the commercial and "amusement" phase to the educational and recreation phase. I should like to see the county fair made the real meeting place for the country folk. I should make a special effort...
to get the children. The best part of
the fair would be the folks, and not
the machines or the cattle, although
these also would be very important.
I should make the fair one great picnic
and gathering-place and field-day,
and bring together the very best
elements that are concerned in the
development of country life.

I should work through every organ-
ized enterprise in the county, as com-
mercial clubs, creameries, co-opera-
tive societies, religious bodies, frater-
nal organizations, schools, and what-
ever other organized units already
may exist.

I would have every person bring
and exhibit what he considers to be
his best contribution to the develop-
ment of a good country life. One
man would exhibit his bushel of potato-
es; another his Holstein bull; another
his pumpkin or his plate of apples;
another a picture and plans of his modern barn; another his driv-
ing team; another his flock of sheep,
or his herd of swine; another his pen
of poultry; another his plan for a new
house or a sanitary kitchen, or for the
installation of water supplies, or for
the building of a farm bridge, or the
improved hanging of a barn door, or
for a better kind of fence, or for a new
kink in a farm harness, or for the ex-
hibition of tools best fitted for clay
land or sandy land, and so on and on.
The woman would also show what she
is contributing to better conditions,—
her best handiwork in fabrics, her
best skill in cooking, her best plans in
housekeeping, her best ideas for
church work or for club work. The
children would show their pets, what
they had grown in the garden, what
they had made in the house or the
barn, what they had done in the
school, what they had found in the
woods. I should assume that every
person living on the land in the county
had some one thing which he was
sure was a contribution to better
farming, or to better welfare; and he
should be encouraged to exhibit it
and to explain it, whether it is a new
way to hang a hoe, or a herd of pure-
bred cattle, or a plan for farmer's in-
titutes. I should put it up to every
man to show in what respect he has any
right to claim recognition over his fel-
loows, or to be a part of his community.

I would ask the newspapers and the
agricultural press to show up their
work; also the manufacturers of agri-
cultural implements and of country
life articles.

I would also ask the organizations
to prove up. What is the creamery
contributing to a better country life?
What the school? The church? The
grange? The co-operative exchange?
The farmers' club? The reading club?
The woman's society? The literary
circle? The library?

I should give much attention to the
organization of good games and
sports, and I should have these co-
operative between schools, or other or-
ganizations, such organizations hav-
ing prepared for them consecutively
during the preceding year. I should
introduce good contests of all kinds.
I should fill the fair with good fun and
frolic. I should want to see some
good pageants and dramatic efforts
founded on the industries, history, or
traditions of the region or at least of
the United States. It should not be
so very difficult to find literature for
such exercises even now, for a good
deal has been written. By song,
music, speaking, acting, and various
other ways, it would not be difficult to
get all the children in the schools of
the county at work. In the old days
of the school “exhibition,” something
of this spirit prevailed. It was mani-
fest in the old “spelling bees” and also
in the “lyceum.” We have lost our
rural cohesion because we have been
attracted by the town and the city,
and we have allowed the town and the
city to do our work. I think it would
not be difficult to organize a pageant,
or something of the kind at a county
fair, that would make the ordinary
vaudeville or side-show or gim-crack
look cheap and ridiculous and not
worth one's while.

If we organize our fair on a recrea-
tion and educational basis, then we
can take out all commercial phases, as the paying of money premiums. An award of merit, if it is nothing more than a certificate or a memento, would then be worth more than a hundred dollars in money. It is probable that the fair would have to assume the expense of certain of the exhibits. So far as possible I should substitute co-operation and emulation for competition, particularly for competition for money.

This kind of fair is not only perfectly possible but it is feasible in many places, if only some one or two or three persons possessed of good common sense and of leadership would take hold of the things energetically. One must cut himself loose from preconceived notions. He must have imagination, and be prepared to meet discouragements. He need not take the attitude that present methods are necessarily all bad; he is merely concerned in developing a new thing. Because I would not have horse races in my fair, I do not wish at all to be understood as saying that horse races are to be discouraged. Let the present race courses in the fair grounds be used for horse races, if the people want them. We have June races now, and they could be held at other times of the year when persons who are interested desire to have them. My point is that they are not a necessary part of a county agricultural fair. They rest on a money basis, and do not represent the people. Neither do I say that all traveling shows and concessions are bad; but most of them are out of place in a county fair and contrary to its spirit.

It is often said that our fairs have developed from the market-places of previous times, and are historically commercial. We know, of course, that fairs have been market-places, and that some of them are so to this day in other countries. I doubt very much, however, whether the history is correct that develops the American agricultural fairs from the marketplace fairs of other countries. From the time when Elkanah Watson exhibited his merino sheep in the public square of Pittsfield, Massachusetts, in 1807, in order that he might induce other persons to grow sheep as good as his, and when the state of New York started its educational programme in 1819, the essence of the American idea has been that a fair is an educational and not a trading enterprise.

An enterprise of the kind that I project need not necessarily be held on a fair-ground of the present type, although that might be the best place for it. If there is a good institution in the county that has grounds, and especially that has an agricultural equipment worthy of observation, I should think that the best results would be secured by holding the fair at that place. This kind of a fair would not need to be inclosed within a Chinese wall. Of course, there would have to be buildings and booths and stables in which exhibitions could be made. In every fair there should nowadays be an assembly hall in which lectures, exhibitions, simple dramas, worth-while applicable moving pictures, and other entertainment features could be given.

My plea, therefore, is that someone somewhere make one experiment with a county fair designed to bring all the people together on a wholly new basis. The present basis is wrong for this twentieth century in which we live. The old needs are passing; new needs are coming in. I would have the fair represent the real substantial progress of rural civilization, and I would also have it help to make that progress. It should be a power in its community, not a phenomenon that passes as a matter of course, like the phases of the moon.

I do not expect all this to materialize in a day; but you are young, and I want to set a new picture into your minds.
The Agricultural Society was organized during the school year of 1871-72. The register for this year shows that there were then in the University, 595 students, of which 12 are listed as in Agriculture.

The faculty of Agriculture consisted as follows: The President; Prof. Caldwell, Dean, General and Agricultural Chemistry; Prof. Hartt, Geology; Prof. Law, Veterinary Science; Prof. Prentice, Botany and Horticulture; Prof. Wilder, Anatomy and Zoology; Prof. McCandless, Agriculture; Prof. Gould, Twelve lectures on farm tools.

It will be noted that the Agricultural faculty consisted largely of teachers of the general sciences, as chemistry, geology, botany and zoology. Prof. McCandless was a new arrival this year and was the first faculty member to devote himself to applied agriculture. Previous to this the applied agriculture had consisted of a few lectures by non-resident lecturers.

It will be seen, then, that there was very little "Agricultural atmosphere" about the University in that day. If the students were to take full draughts of that article they must help to create it for themselves.

It is natural, then, that the students of that early date should be led to form an organization for the exchange of ideas and experiences relating to agriculture and to train themselves in discussion and debate. An organization was effected under the name, I think, of "The Cornell Agricultural Club." Day sessions were held in one of the rooms in the north part of Morrill Hall (then called the South Building), so long the home of the Agricultural College, and evening sessions in Cascadilla Building. I think there were no facilities for lighting in Morrill Hall at that time.
Membership was not confined to Agricultural students. Some who were registered in the then popular Course in Science were associated with us. Frequently the papers presented were as appropriate for a science society as for an agricultural club.

I have found no records of those early meetings. The earliest records that I have seen bear date of 1884. I have no positive proof that the society maintained an uninterrupted activity during the twelve years between 1872 and 1884, but it has been publicly announced on several occasions that it is believed to have done so, without eliciting any testimony to the contrary.

While I have no records of those early meetings, I distinctly remember the incumbents of the various offices. The president was C. Y. Lacy who graduated in 1873 and has the distinction of getting the first degree in Agriculture granted by Cornell University. He went to Minnesota State University for a few years as professor of Agriculture, then was engaged in an extensive sheep industry in Montana, and finally settled in California, where he now resides. The secretary was W. R. Lazenby, now Professor of Forestry at Ohio State University. He remained at Cornell several years as instructor in Horticulture. While here he drew the bill that was passed by the State Legislature establishing the State Experiment Station at Geneva. The corresponding secretary of the club was David Starr Jordan, now president of Leland Stanford Jr. University, and the treasurer was the writer of this article.

Those early days of the University and of the College of Agriculture were very different from these, both in number of students and facilities for instruction. Nearly all the subjects we now class as applied agriculture have been developed since that day. Nevertheless, the students received training that has served them well in their work in life.
I AM glad to offer a few remarks on this subject in response to the invitation of the Editor of The Countryman because I am personally interested in this expression of intercollege student relation, and because I feel that they have an important bearing upon the health of the student body.

The purpose of the Association is not concerned with athletics and physical exercise exclusively, although these are its main interest. It hopes by means of competitive athletics to maintain pleasant relations and establish closer intimacies between students otherwise separated by curriculum and college duties. How often do the less prominent students meet students of their own University for the first time in the business world years after graduation! There is a natural tendency towards segregation into groups having similar class interests. To that extent, a narrow type of provincialism may creep into the University. The student's affiliations should be much wider than the boundaries of his own college. He is likely to go into the world a relatively narrow man who does not cultivate the point of view and acquaintance of men in other colleges. The engineer and the agriculturist can profitably brush shoulders as surely as intercourse between arts and architecture may be profitable. I do not wish to press this point with undue emphasis, but it is well worthy of full consideration in these days when the student membership of most of the colleges is so steadily and in some cases rapidly increasing. May we not then in view of these points encourage intercollege athletic activities on the special plea of improving personal and social relations?

The principal object of the Association of course is to promote and extend among the student body a general desire for outdoor, healthful exercise. We realize that an incentive is needed for all kinds of cooperative effort. The money incentive is the most potent of all—hence our great corporations. Here (in intercollege athletics) the incentive is for the building of a physical machine capable of performing its share of the world's service in an efficient manner. The main stimulus lies in the chance of the game. There is practically as much individual enjoyment to the participants, in the victory of a mediocre team over a well matched opponent as there is when both teams represent "all star performers." This is from the standpoint of the performer. Intercollege athletics provides a place for the middle class man. It may also discover a "star" now and then. In this it will rejoice, but it is really less concerned with the star than the rank and file. We are proud of our varsity athletics and of the reputation they have built up for Cornell for fair play and clean dealing. This reputation is being jealously guarded by our worthy coaches, and we may trust them freely.

The history of intercollege athletics at Cornell is brief, but not without some degree of satisfaction to those associated with its progress. Organized in 1907 and unsupported by anything but practically voluntary contributions, it has passed through three successful years each one tending to consolidate its organization and sharpen the interest of the student body. The affairs of the Association are directed by a Board of Managers consisting of one representative from each of the seven colleges comprising the Association, mechanical engineering, arts, agriculture, civil engineering, law, architecture and veterinary science, and two faculty members. The Board has power to choose any additional advisory members whom it may elect.
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Intercollegiate Race, 1910

College in the Association is assessed a small sum in proportion to its size to cover current expenses. The contests engaged in by the teams representing the different colleges for the past three years included the following events: Association football, cross country running, basketball, indoor meet, base ball, rowing and track. Contests for the intercollegiate supremacy in "soccer" are in progress twice each week on the Alumni field. A set of rules and regulations governing each event has been printed and should be consulted by each player. The present officers are: John Craig, president; J. R. Hoffert, vice-president; C. R. Armstrong, secretary; C. V. P. Young, treasurer.

The year closing June, 1910, was most successful in point of interest and also with reference to the number of men who "came out" in response to the opportunity. Professor Young of the Department of Physical Culture estimates that more than one thousand men secured healthful exercise in addition to pleasant outdoor diversion in connection with the intercollegiate series of games. This is a splendid showing. The time factor in all athletics is the difficult one. With the increasing number of practicums and laboratories in all departments, the amount of time available in the afternoon is becoming more limited each year. Ability to get exercise with a minimum loss of time is thus very important. In this respect agriculture is advantageously situated. The proximity of the fine expanse of playground and athletic field permits the student in agriculture to reach the field most expeditiously. The spirited scene on the playground these fine October afternoons when the beautiful expanse of sward on both levels is completely occupied by variegated and variously garbed and vigorously occupied youths is certainly encouraging for the future of intercollegiate athletics.
Another feature worthy of mention is the fact that these organizations are constructed and maintained by the students for the love of the sport. This is sufficient. It is interesting to note that college spirit is just as strong in the smaller colleges as in the larger, for the architects, lawyers and veterinarians, much to their credit, have been loyal supporters and keen contestants in every series since the beginning. That these contests are not lacking in intrinsic interest is evidenced by the finals in the crew races last year. In this connection it is worthy of record that in order to further rowing, civil engineering and agriculture have acquired (the former by gift and the latter by subscriptions) rowing gigs for their own use. I understand that mechanical engineering is considering the same matter, and it is to be hoped that the other colleges will before long equip themselves in like manner. Cornell should not invest all its aquatic interest in the proud records of our invincible varsity.

I am glad to say an unbiased word in appreciation of the college spirit shown by the men in agriculture. Their achievements are worthy of congratulation for they have been progressive from the beginning.
FORMER STUDENTS

'07, B. S. A.—Howard C. Pierce, formerly assistant professor of poultry husbandry at Iowa State University at Ames, Ia. and who is now in the employ of the U. S. government is at present at Atlantic, Ia. He is working on the cold storage problem dealing with dressed poultry and eggs.

'09, B. S. A.—W. W. Bonds has been appointed horticulturist at the University of Maine. He expects to return to the University in the winter to continue his studies as a graduate student.

Mary A. Fitch who was a candidate for Ph.D. in 1908-09 has been appointed Botanical assistant at Purdue University and is also continuing work on her Thesis.

'05, B. S. A.—J. G. Halpin who was an instructor of poultry at Michigan has gone to Wisconsin as assistant professor.

'08, W. P.—A. G. Philips is now in charge of the poultry work at Purdue University.

'08, Sp.—Chas. R. Barker was married on the evening of October 10, 1910 to Miss Flossie Isabel Forman, at New Lynne, Ohio. Mr. and Mrs. Barker visited Cornell University October 15 and 16. Mr. Barker is now on his own farm at South New Lynne, Ohio.

'08, W. P.—A. Lippincott who receives a degree in agriculture from Iowa State University this year is in charge of the poultry work at that institution.

'10, B. S. A.—F. S. Jacoby, president of last winter’s poultry association is in charge of the poultry at the Kansas State Agricultural College. He is assisted by Tryggeve Schreiner, S, '10.

'10, S.—Wilfred M. Anderson is in charge of the Turtle Point farm at Saratoga Springs, N. Y.

'10, W. P.—F. T. Finch is in charge of the incubator rooms of the poultry department here at the University.

'10, W. P.—George Martin is connected with a land developing firm at Schwanee on the Delaware, Penn. He has charge of the poultry farm which is to supply the hotels and families situated on the land developed by the company.

'10, Ph. D.—Ormond Butler has been appointed Research instructor in Horticulture at the University of Wisconsin. This position is something entirely new.

'10, Ph. D.—H. A. Harding has returned to his work at the Geneva experiment Station. He is going to investigate particularly the ferment producing organisms of cheeses.

'10, B. S. A.—William H. Marcusen who specialized in dairy work is now in the employ of the Lederle laboratories in Brooklyn. There is a possibility that he will be connected with the New York state experiment station at Geneva in the near future.

'10, B. S. A.—Frank W. Messing is now in the employ of the Queen City Dairy Co., Buffalo, N. Y.

'10, S.—Louis Tollins is with the Newark Milk & Cream Co. at Newark, N. J.

'10, B. S. A.—Thomas J. McInerney and Walter W. Fisk are both connected with the Dairy Department of the college. The former is assisting Prof. Ross and the latter is in the cheese department.

'10, B. S. A.—R. E. Deuel who specialized in animal husbandry is now assisting in that department.

'10, M. S.—M. McCool has been appointed instructor in the plant physiology department.

'02, Ph. D.—Dr. K. Miyake, lecturer in the Department of Botany in the Imperial University of Tokio, Japan, is now in this country on an extended trip. He has been sent by the Korean government to study diseases of ginseng. Ginseng is under government monopoly in Korea. Dr. Miyake is studying these diseases in the laboratories of the Department of Plant Pathology. The government also sent with him Mr. M. Tommiiye, chief expert for the ginseng administration.
Departmental Clubs

At this time of the year after each activity of the College has been described in such glowing terms by its respective upholders it may seem rather unnecessary to bring up the subject of Departmental Clubs. However, the Cornell Countryman feels that these organizations cannot be too strongly represented.

In these clubs the men who are really interested in fruit growing, animal husbandry or poultry husbandry gather to discuss topics which are vital to progress and success in these different branches of agriculture. No student can attend these meetings without becoming more broadly trained in the work in which he is specializing.

We urge the student who is just starting in here and has not yet decided in what line of study he is going to specialize to visit all of these clubs in turn, hear the respective subjects discussed by men who know what they are talking about, and then make up his mind as to which branch of agriculture he desires to devote his life and then stick to the department representing that branch.

The regular student, swamped by required work in the College or Arts and Sciences, for his first two years entirely overlooks these meetings. This practice we believe is entirely wrong as we are sure that the student will be much better fitted to take up his agricultural work if he has listened to the discussions in these different clubs.

Lest some may not know, the Horticultural Club is named the Lazy Club and meets every Monday evening at the Greenhouse. The Animal Husbandry or Round Up Club also meets every Monday evening in the Animal Husbandry Library, while the Poultry Association holds its meetings twice a month.

Besides the training which one receives by attending these meetings the social side must not be overlooked. There you meet the men who are interested in the same things as you are and friendships are formed which remain through life and greatly facilitate business relations in after years. Another feature which always attracts students is refreshments of some sort which often appear unannounced at these meetings.

The County Fair

In another part of this issue Dean Bailey puts forth in characteristic, clear and forceful manner his ideal county fair. The Countryman believes that the county fair needs rejuvenating more than any of our
agricultural institutions and stands ready to lend a hand in the campaign for its improvement.

It cannot be expected that the county fair will be completely revolutionized at once. The change will be the result of slow evolution but we are confident that the change will come and that the county fair will stand for education and clean recreation rather than bunco games and cheap amusements.

We are sure that many people will disagree with Dean Bailey in some of the details of his plans but we must all agree that it is much better that the fair should be more of a large county picnic and meeting place for old friends than it now is. We would all be glad to escape from that feeling, which we all have at fairs, that everywhere we go someone is trying to sell us something, and there is no right-thinking person but feels that the vulgar side shows and freak museums must go.

It is up to every student, to every alumnus of this College, and to every person concerned with rural improvement to stand with Dean Bailey and do all in their power to make the county fair representative of and uplifting to the people who live in the country.

The Exhibit this year will be held Thursday, Friday and Saturday, November 3-4-5, and we know that, as in former years, the rooms will be filled by interested spectators during the greater part of this time. Professor Wilson has just returned from an extended tour of western fruit regions and we understand has arranged for a large exhibition of western fruit at this year's Exhibit. This Fruit Exhibit has always attracted wide attention and exceedingly favorable comment. We are sure that the show of this year will exceed all former efforts. The COUNTRYMAN takes great pleasure in expressing this little word of appreciation to Professor Wilson and the students under him for the success of this annual Fruit Exhibit which has become one of the things of which this College is justly most proud.

During early November the students in this College are sure to be looking forward to something. Never yet have they been disappointed but instead the realization has always exceeded their expectation. We are talking about the Annual Fruit Exhibit given under the auspices of the Department of Pomology.

The Annual Fruit Exhibit

An Artistic Editor

Because of duties at home, A. M. Kruse, '11, Artistic Editor of the CORNELL COUNTRYMAN, was unable to return to the University this fall. Having no assistant Artistic editor the position of Artistic editor on our Board is vacant.

We feel that this department of our magazine is sufficiently important to demand the entire attention of one member of the Board. The competition for this position is now open to any student in this College and when any student has demonstrated his artistic ability to our satisfaction he will be given the now vacant position.

The COUNTRYMAN makes an urgent appeal that all students who are at all inclined toward this kind of work will come down to the office and talk things over with us.
The Ag. soccer team defeated the C. E. team in the first game of the season by the score of 1-0. The team was composed of Funk, Sonnenfeld, Rogers, Lemon, Hageman, Wilson, Neethling, Bishop, Puga, Lipman and Chew.

* * *

The first meeting of the Cornell Bacteriological Association was held on Friday evening, October 14. A talk on “Qualitative Bacteriological Methods with particular reference to Soil Investigations” was delivered by Mr. H. J. Conn.

* * *

The Committee for the Promotion of Agricultural Science held their annual meeting at the College of Agriculture, October 11, 1910 and spent the afternoon in their annual inspection of the buildings of the college. This committee meets at the college once a year to keep in touch with the work of the college and serves as a connecting link between it and the farmers of the state. The following men were present at the meeting: R. A. Pearson, Commissioner of Agriculture; T. B. Wilson of Hall’s Corners, president of the Fruit Grower’s Association; F. N. Godfrey of Olean, master of the State Grange; Dr. E. M. Santee of Wellsboro, president of the State Dairymen’s Association; W. F. Marx of Clifton Springs, president of the State Bee Keeper’s Association; F. D. Ward of Batavia, president of the State Sheep Breeders’ Association; Dean Bailey and Secretary Mann of the College of Agriculture.

Professor C. S. Wilson has been travelling in the west studying the methods used in Pacific Coast fruit growing. He was well entertained by friends at the Oregon Agricultural College. Professor Wilson is sending home large quantities of fruit to be shown at the Annual Fruit Exhibit. He will not be back in Ithaca until the first of November. In his absence, Dean Bailey gave the first lecture in the course in Elementary Pomology. Later lectures were given by Dr. Webber.

* * *

The Fourth Annual Fruit Show is to be held at the College, November 3, 4, 5. Preparations are under way to make this the best show ever held in Ithaca. With the large exhibit sent from the West by Professor Wilson, an interesting comparison may be made between the fruit of the East and the West. It is hoped such a high-grade exhibit from the East will be on hand as to prove conclusively that we can compete in every way with the West. A meeting was held on Tuesday, October 13, at which F. M. Morrison was appointed general chairman, and the following were elected to serve as heads of the various committees:— Buchholtz, Auchter, Stark, Strahan, Tenney, Petersen, Bradlee, Hardenburg, and Miss Jenkins.

* * *

A get-wise meeting for freshmen in Agriculture was held at the College on the evening of October 3. E. M. Tuttle, ’10, presided. The meeting was opened with the singing of the
Alma Mater. The first address was given by A. R. Mann, secretary of the College, who urged the freshmen first to go out for University athletics and then to turn their attention to the activities of the college. The following speakers then informed the freshmen as to the various activities. J. C. Laue, soccer; W. G. Stephenson, basketball; H. N. Humphrey, track; C. E. Emmons, baseball; J. B. McCloskey, crew; H. B. Rogers, musical Clubs; S. G. Judd, Cornell Countryman; E. M. Tuttle, Agricultural Association and Departmental Clubs. Miss McCloskey then spoke to the students. Prof. Rice wound up the evening with a stirring talk which infused enthusiasm and spirit into the meeting. After the Evening song, all remained for a social hour.

The first Assembly of the College of Agriculture was held on Thursday evening, October 6. In spite of the weather, a good crowd was out to hear Dean Bailey's first address after his year's absence. The Assembly was opened with the singing of the Alma Mater, after which a vocal solo was given by Mr. Peck. This was followed by a solo by Miss Browning. Dean L. H. Bailey then spoke to the students. His message was a strong one, a plea for individualism. He said that he wished the egress from the country to the city would continue until rural districts are purged of all men unwilling to work. Dean Bailey delighted the audience with two new poems of his own composition. After the Evening Song, a social hour followed. At Dean Bailey's request, refreshments will no longer be served after assemblies.

The musical clubs of the Agricultural College are very fortunate in securing the services of Mr. Edward T. Johnston, University organist, as coach. Tryouts for the Glee Club were held October 11, and for the Musical Clubs, October 13. Under Mr. Johnston's leadership, the clubs should this year reach a state of proficiency never before attained.

The first meeting of the Frigga Fylga was held in the Agricultural College on the evening of October 11. A competition for the editorial and business sides of the Cornell Countryman was started after the Get Wise meeting on October 3. There is still a chance for others to come out and try for the Board.

A meeting of the Agricultural freshmen was held on the evening of October 12 in the Auditorium. Professor C. H. Tuck gave an address on the subject of "making good." F. H. Halmel, '11, manager of Agricultural cross country, made an appeal for candidates to start practice. E. G. Perl, president of the class, conducted an election for the remaining officers of the class with the following result: Vice-president, C. R. Gleason; secretary, J. P. Sanderson; treasurer, J. H. Jones. The following committee was appointed to draw up a class constitution. A. J. Pezold, chairman; Fred Frank, L. B. Hendershot, H. C. Stephenson, C. H. Ballow.

The following men made the Agricultural glee club as a result of the tryout on October 12, 1910.


* * *

A special business meeting of the Poultry Association was held Nov. 2d. One new member was elected to the executive staff.

On Nov. 9, a regular meeting was held. The relative merits of a colony system and of a long house system for laying hens was discussed. A majority favored the latter plan. Professor Rogers gave an illustrated talk upon the subject after the discussion. Refreshments were served.

* * *

The Agricultural soccer team defeated the Vets on October 13, by the score of 3-0. The line-up was the same as in the last game.

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At a poorly attended meeting of Agricultural students interested in cross country on October 17, Hardenburgh, '12, was elected manager. The inter-collegé race will be held on November 12.

* * *

Energetic attempts are being made to fix up a trophy room for the College. Until larger space can be provided, the seminary room has been decided as a temporary place. A committee has been appointed to go ahead with the matter. Since the room is needed for classes, instruction will be carried on there at the same time. Shelves will be arranged to hold the cups, and banners and framed pictures of the teams will decorate the walls.

* * *

Three additional fellowships have been established in the Department of Plant Pathology as follows:

For the investigation of the effect of cement dust on the setting of fruit, injury to foliage, etc., given by Mr. Wessel Ten Broeck, Hudson, N. Y., to be known as the Ten Broeck Fellowship.

Fellowship established for the investigation of the nature and control of the diseases of orchard crops. Special attention will be given the New York Apple Tree Canker disease. Given by the Byron Fruit Growers' Association, South Byron, N. Y. To be known as the Byron Fellowship.

The third fellowship, which carries an appropriation for two fellows—one in the Department of Plant Pathology and the other in the Department of Entomology, has been established by the Bethany-Batavia Fruit Growers' Association, Batavia, N. Y. The object of this fellowship is the investigation of the nature and control of the fungous diseases and insect pests of orchard crops in that region.

* * *

On Thursday, October 18, 1910, at 8 P. M. the Agricultural Association held its first meeting of the term. Reports were made by the secretary, treasurer, and the chairmen of the committees with the work of organizing the freshmen. Among the unfinished business transacted was the appointing of a committee to collect contributions for paying for the College of Agriculture’s gig, and the awarding of medals to last year’s athletic teams. New drinking fountains and a clock in the main hall was arranged for. A committee of five was appointed by the President to fit up one of the seminar rooms as a trophy room. The discussion was begun concerning the best methods of Agricultural Education, whether in independent secondary schools, in
regular high schools, or in secondary schools dependent upon colleges. On account of the lack of information among those present the discussion was postponed until the next meeting. After the close of the meeting the members of the Honor committee were elected by the various classes.

* * *

E. C. Earle, '08, a former football man is in town and will assist in the coaching of the football team. Mr. Earle is at present on a farm in Virginia.

* * *

The first meeting of the Poultry Association was held Thursday, October 14. A large crowd was present including several members of the Frigga Fylga. As soon as every rooster had found his mate, the crowd assembled around a huge bonfire. The Alma Mater was then sung, followed by other songs. Several Cornell yells were given, Mr. Benjamin acting as leader. From the bonfire everyone marched to the summer house where refreshments were served. After the fire went out the night grew cold compelling the visitors to go inside, where they met "Uncle Josh" speaking through a megaphone. He told his audience about a visit to a Chinese laundry as well as some other exciting incidents which he had lately experienced.

It is to be hoped that the spirit which prevailed will continue throughout the year.

GENERAL AGRICULTURAL NEWS

The transportation companies all seem to be trying to discredit the work of the Interstate Commerce Commission whenever they can. The drivers and agents say that this Commission forces the express companies to make these charges. This is absurdity personified. The Commission simply tries to make the rates fair, and to see that these rates are alike to all. The express companies make their rates, the Commission simply reviews them.

The Rural New Yorker gets in a knock on the Congressmen in this manner: "During the month of July 30,510 gallons of cream were shipped from Quebec Province—entering one point at Vermont. Butter brought $0.22 in Canada and $0.29 in this country. There is tariff on butter, but cream is free. This $15,000 worth of cream was made into butter by large manufacturers, and entered into competition with butter made from American cows without benefiting American consumers. Ever since the beginning of this Government there has been this strange mix-up of tariffs. In 1789 Congress first met to arrange for a revenue. Rum and molasses were two articles of commercial importance. Both were brought from the West Indies. They were exchanged for American goods, and gave occupation to American sailors. Rum distilling was one of the chief industries of New England, while the great majority of the people used molasses on their bread as our people now use butter. It was proposed to put tariffs on both rum and molasses. Rum was sure to furnish a good revenue. A tariff would, it was claimed, discourage importation, and that would help the morals of the people! Then the advocates turned right around and said the tariff would keep out rum, but let in more molasses, and thus enable the New England stills to make more rum. So Congress taxed rum at 15 cents a gallon and molasses at six cents! During the debate one man from New England claimed that Congress was not a church or a school to discuss morality, and that would help the morals of the people! Then the advocates turned right around and said the tariff would keep out rum, but let in more molasses, and thus enable the New England stills to make more rum. So Congress taxed rum at 15 cents a gallon and molasses at six cents! During the debate one man from New England claimed that Congress was not a church or a school to discuss morality, and that would help the morals of the people! Then the advocates turned right around and said the tariff would keep out rum, but let in more molasses, and thus enable the New England stills to make more rum. So Congress taxed rum at 15 cents a gallon and molasses at six cents! During the debate one man from New England claimed that Congress was not a church or a school to discuss morality, but a body of men looking for a plan to raise money for the country—and we suppose for themselves! These men of a century ago were a little more blunt in their hold-up than those we send to Congress now!"
The prices of milk per 100 pounds in the interior district for next few months is as follows: October $1.90, November $1.95, December $2.00, January $2.00, February $1.90, March $1.75. Although this price for the New York milk markets is a little higher than has been offered for a number of years, yet the price is disappointing to the majority of dairymen. This gives the dealer an average of nearly five cents a quart for handling it, while the farmer gets only about four cents average for producing and delivering at the stations. Is this reasonable? The Rural New Yorker seems to have the right idea. It is as follows:

"In former articles we have given some of the arguments for a State milk commission to regulate the price of milk. As it is now neither the producer nor the consumer has anything to say about price. One accepts and the other pays what the dealers see fit to give or charge. Under present conditions there seems little chance for any permanent improvement. There would be in the case of grain or some product which can be held back and stored, but the life of milk is so short that it must be sold at once for some purpose. Whenever the price of milk is raised to city consumers the dealers talk as if they were losing money and cannot afford to pay farmers their share of the increase. Some facts were brought out at the last investigation that need to be repeated over and over. Bordens Condensed Milk Co. has a total capital stock of $25,000,000. Of this $15,428,408.46 was issued for patents, trade marks and "good will," thus not representing actual money value. This is what we call "water." During the year ending September 30, 1909, this company paid a net profit of $2,617,029.40, which is nearly 28 per cent of the capital invested with the "water" squeezed out. In addition to paying good dividends for 10 years the company had rolled up a surplus of $8,824,230.59. Other large companies showed similar profits, which were the result of a milk monopoly. While monopoly and restraint of trade are supposed to be illegal, this one could not be broken up, since it was the result of a "gentlemen's agreement" in which no written contract is made. While these conditions exist nothing short of a complete hold-up of milk would help the producers. This is impossible at present, and even if it could be done would inflict great hardship upon the consumers. A milk commission authorized to review the entire business and make fair rates for both wholesale and retail milk would come nearer to giving a square deal to both sides than anything else yet suggested."

* * *

For a long time it has been claimed that blueberries could not be successfully cultivated. The Department of Agriculture have now propagated plants by budding, layering, grafting and by twig and root cutting. Strangely enough the plants do not do very well on rich garden soil but prefer a poor acid soil. This may account for many early failures.

* * *

The New York State Dairymen's Association and the New York State Butter and Cheesemakers' Association will hold their annual convention jointly at Ogdensburg, N. Y., December 13th, 14th, and 15th, 1910. Efforts to make this the best meeting in the history of the Associations will be made by the people of Ogdensburg and the surrounding country, which is one of the great dairy sections of the State.

BOOK REVIEWS

The Scientific Feeding of Animals, by Professor O. Kellner, of the Agricultural Experimental Station, Möckern, near Leipzig. Authorized translation by William Goodwin, B. K. Ph. D. Published by Macmillan Co., New York City and sells for $1.90 net.

We are always glad to welcome international exchanges of scientific
thought and experiment, especially in that most intricate field—Animal Nutrition, in which so much progress has lately been made. The German investigations have contributed so much to the science of it that a book setting forth the latest achievements in that country will be heartily welcomed by all Americans. As Dr. Goodwin says, "it will have something of the value of a visit to a foreign country, which is so beneficial in arousing a spirit of critical observation with regard to the practices in vogue there."

The universal need and value of Prof. Kellner's book is proved by the fact that it is now appearing in seven languages and the original is in its second edition. It gives clearly and concisely information which every farmer or agricultural student ought to possess.

Part I discusses, clearly and forcibly the main principles upon which the theory of feeding is based, then follows in part II a short descriptive account of the different feeding-stuffs, dealing more with their suitability and use than with the percentage amounts of nutrients which they contain and further discussing the methods used in the conservation and preparation of feeding stuffs. Part III ably discusses the conditions which should be observed in the feeding of the different kinds of domestic animals. On the whole the book promises to be a very interesting and valuable contribution to American knowledge in this science.

How TO KEEP Bees FOR PROFIT, by D. Everett Lyon, Ph.D. Macmillan Company, 66 5th Ave., New York City. $1.50 net.

Laying down a series of rules and principles for the keeping of bees and yet arranging them in such a way as to make the reading of them as interesting as a story, is what Mr. Lyon has accomplished in his book on bee-keeping. His clearness and conciseness make the book an acceptable manual for a person intending to start in this occupation. Throughout the text, he attempts to overthrow many of the erroneous ideas which have attached themselves to this industry as to most of the branches of agricultural science.

His first chapter is on the physiology of the bee, followed by a detailed account of the races of bees, the units of the bee family and a description of their home. Then follows the main part of the book, devoted to instructions as to the starting of bee-keeping, handling and quieting, controlling swarming, raising queen bees, producing comb and extracted honey, fighting the enemies and diseases, marketing the crops—in a word all the information necessary for successful bee-keeping. Then follows a long list of the sources of honey.

A commendable feature of his book is his conclusion in which he warns the beginner of the work and difficulties attached to the rearing of bees and does not allow his enthusiasm to fill a man, unfit for the work, with perspiration rather than inspiration.


A new edition of the Root Bros. well known book, The A B C and X Y Z of Bee Culture, has just come from the press. In the 1910 edition a large number of new photographs have been added, showing the successive steps of various manipulations described. Over twenty articles have been added and twelve rewritten by specialists in their particular lines. This book, since it's first edition, has been a very thorough and extensive treatise upon all the phases of bee culture. For example, everything relating to the chemistry of honey has been written by Prof. Hugh Bryan, of the United States Department of Agriculture. Dr. E. F. Phillips, of the same department, has written a number of articles on technical subjects; and R. E. Snodgrass, has prepared the article in the appendix on The Anatomy of the Bee.
LOYAL CORNELLIANS: We have a message for you. A reply from you is required. Your answer should be yes. We are certain it will not be no. Otherwise our salutation, “Loyal Cornellians,” would be out of place. It would not apply to you.

This is the message: “Will you promise to give one or more “Cornell Countryman” subscriptions to your friends for a Christmas or New Year’s present (or send it as a valentine)?” You had not thought about it? Then think about it now. Consider what it would mean to the ones who give, to the ones who receive and to the ones who make the Cornell Countryman, if every member of the Agricultural College faculty, of the student body and of the former students of the Agricultural College should act upon this suggestion. Why not act? Could you give to your friend more for one dollar? Could you give a more appropriate present to a person already interested, or who ought to be interested in farming? Is there any other gift which would mean so much in results? Results are what count in giving. You will be placing in the hands of your friend not one present, but nine presents,—one each month of the college year and each one a good one; good, not simply to look at, but instructive and inspiring; useful, not only to your friend, but to all the family. It might inspire someone to take a course at an Agricultural College. Stranger things than that have happened. It might start someone right in better methods of farming. It would be surprising if it did not. This certainly would be worth while. What about the effect of an avalanche of subscriptions on the Cornell Countryman? To increase our circulation would add to our net income not only on account of economy of publication, but would help our advertisers and increase our advertising. This would all go into our paper—your paper—to enable the Countryman to hold the enviable place which it now occupies among the agricultural college magazines. The Countryman staff works without pay or University credit. They need your support in order to make progress. Great strides are being made in agricultural college journalism. We must not fall behind in the race. We must not, we cannot, stand still. We must advance. You can help.

We have eighty members in our Agricultural College staff. We expect to have more than twelve hundred students before the end of this college year. We have at least four thousand “former students,” making a total list, (which we hope is a live one) of approximately four thousand. How many of these will have sufficient Cornell spirit and pride in their profession, their college and their college publication to respond to this appeal? We have faith to believe the response will be large. Will you do your part? DO IT FOR CORNEL, YOU, NOW.
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Put your money in residential building lots. Be sure they are in improved sections. Buy close to a big city. Purchase early, don't let others make profits out of you. The greatest fortunes were made by realty investments. We will offer 1000 choice building lots on December 1st, at prices that will pay very handsome profits. Terms of purchase, $25.00 cash, per lot, balance in thirty-six equal payments. No interest or taxes during this period. If you die before completing your payments, a deed is given your heirs, without further cost. Size of lots, $5.00 and upward, according to location. By investing in land you own something for your money. Investments in stocks or savings accounts are under the control of others. We guarantee you a profit of at least 25 per cent, for the first year. Subscription lists are now open. By remitting us $10.00 per lot, subscribers get first selections. The first 500 subscribers will also receive a credit of 10 per cent, on their purchase. Act now. Let us make money for you and protect your savings.

Buffalo Land Security Co.
Ellicott Square, Buffalo, N. Y.
The Cornell Countryman

Cor. Buffalo and Eddy
Cor. Eddy and Dryden

H. M. SPANG & CO.

Merchant Tailors...

New Stock Prices Right
Work Guaranteed

GIVE YOUR CUSTOMERS WHAT THEY PAY FOR
If you give them less, you're cheating them; if more, you're cheating yourself.

Thatcher Milk Bottles
vary about ¼ as much in capacity as other kinds. Be on the safe side— Use Thatchers
Our free book “More Profits” is worth sending for.

THATCHER MFG. CO.
Dept. C.
Elmira, - N. Y.

THE FAMOUS
ITHACA HOTEL BARBER SHOP
is the place to get your Barbering done

F. H. ESCHENBURG

The Modern Dry-Cleaning and Pressing Works

103 Dryden Rd.
Formerly The Corner Tailor Shop

CONTRACTS

MERCHANT TAILORING
Suits to Order, $17.50

MACHINE EQUIPPED
CLEANERS

In writing to advertisers please mention THE CORNELL COUNTRYMAN
Check here: My first Season's Experience with the Honey-Bee. By "The Spectator" of the Outlook, New York. A ten-page leaflet detailing the experience of this well-known writer. You will read the leaflet through before you lay it down. Free.

- Bees and Fruit. A pamphlet showing the importance of the honey-bee to the fruit-grower. Free.
- Bee-keeping for Sedentary Folk. A 24-page leaflet reciting the actual experience of an amateur bee-keeper, showing what equipment is best, profits derived, etc. Free.
- Gleanings in Bee Culture. A 64-page illustrated semi-monthly magazine, the leading exponent of bee culture in this country. Ten cents per issue, but to new subscribers we will furnish it six months for 25 cents.

This sheet may be used as an order sheet by proper checking on margin, your signature, and remittance if required.

THE A. I. ROOT COMPANY
Box 20, Medina, O.

Goulds' Sprayers

THE Experienced Fruit Grower is the man who realizes the importance of using only high-class Sprayers. He knows that spraying is what you make it—a hard job or an easy proposition, depending on the outfit. Most Growers have learned that it doesn't pay to bother with cheap ones. Goulds' Sprayers have a reputation to maintain. They comprise a line of

OVER 25 STYLES

for both Hand and Power—all simple—all working parts brass to withstand wear and the chemical action of the solutions. Don't be caught experimenting with a cheap sprayer—see that the name Goulds is cast on the pump. Its presence is the assurance you are buying the very best sprayer made. It guarantees satisfaction and reliability. Write for our book.

"HOW TO SPRAY—WHEN TO SPRAY—WHAT SPRAYER TO USE."

It is full of interesting information and contains many valuable formulas for spray mixtures. Copy sent free on request.

The Goulds Manufacturing Co.
16 W. Fall St.,
Seneca Falls, N.Y.
We build pumps for every service.

In writing to Advertisers please mention THE CORNELL COUNTRYMAN.
When wanting

QUALITY, SERVICE AND CLEANLINESS

go to

WANZER & HOWELL, The Grocers

PICTURES  PICTURE FRAMES
STUDENTS’ FURNITURE

Manufacturers of Special Furniture for
FRATERNITIES AND CLUB ROOMS

H. J. BOOL CO.
(Opposite Tompkins County Bank)

ONE OF THE IDEAL VEGETABLE HOUSES

Ideal, because it is first of all, built
of an enduring Sectional Iron Frame
Construction that outlasts every known
greenhouse structure.

It is 40 feet wide and 100 feet long.
The vegetables are planted directly in
the soil—no benches. The soil ventila-
tion sash are arranged so the soil can
be thrown in or out conveniently. It
is the practical house for the practical
man.

Particulars of all our types of houses
for all purposes, gladly furnished. We
built the last houses put up at Cornell.
Particular Men

who desire the best in the quality and style of their clothing and furnishings.

Trade at

the home of

The Quality Shop

Hart, Shaffner & Marks
Hand-Tailored Clothing.

E. B. BAXTER,

150 East State St., Ithaca, N. Y.

One Price to All.

Selling Baggage and telling tales are very similar. Somebody can always go you one better.

Every retailer is just pop-gun certain sure that nobody on earth has better merchandise than he.

But mighty few will like to have you match some other fellow's goods with theirs.

Comparisons are, often, odious.

Now I am so sure of my traveling goods that I want you to see others along side of mine. You'll buy mine.

The baggage you want: at the price you want to pay.

W. J. REED, 149 E. State St.

ROTHSCHILD BROS.

“Student Supplies” for rooms

Decorations and Necessaries

Carpets, Rugs, Bedding, Sofa Pillows, Banners, Desk furnishings, Lamps, Steins, Curtains, Books, Waste Paper Baskets

Men's Wear

Shirts, Collars, Cuffs, Hosiery, Underwear, Sweaters.

Rothschild Bros.

“The Store of the City”
Typewriters!
Sold, Rented, Exchanged, Bought and Repaired
Ribbons and Supplies for all Machines

Macey Filing Devices
and Card Systems

Thesis and Notes Typewritten

HOWARD L. O’DANIEL
Successor to Burrows & O’Daniel
205 East State St. Bell "Phone 604

D. S. O’BRIEN
Markets
222 North Aurora Street
430 North Cayuga Street
DEALER IN
Fresh, Salt and Smoked Meats
Poultry and Game in Season

D. S. O’BRIEN

In writing to advertisers please mention THE CORNELL COUNTRYMAN
RESERVED FOR

Modern Method Laundry

Pictures Picture Framing

Smith's

- 315 East State Street -

L. C. BEMENT

The Toggery Shops

Established 1888

Agents for Mark Cross

Leather Goods and Gloves

for men and women

Shirts made to order

Hatter, Hosier, Glover Cravatter

Maker of Shirts that fit

Down Town
142 E. State
(2) Shops

On the Hill
404 Eddy St.
(1) Factory

SUN-RAY

The World's Purest Water

and

Ginger Ale

For sale at

The Ithaca Hotel and Cafes

Carr & Stoddard

Merchant Tailors

Up-to-date Styles and Work

Seneca and Aurora, next Lent's Music Store

Get your Sporting Goods at

T. A. Kelly's

Eddy Street

When writing to Advertisers please mention The Cornell Countryman.
The Cornell Countryman

The L. J. Carpenter Tailor Shop
Sanitary Steam Presser
205 North Aurora Street
Cleaning, Pressing, Dyeing, Repairing, Etc.
Bell ' Phone 567  Ithaca ' Phone 420-x

Reserved Tompkins County National Bank

WISE THE PRINTER
Is at your Service for all Classes of Fine Printing, Engraving, etc.
Up-Stairs

BUFFALO BRANDS
The Fertilizers that are making good, as evidenced by the increase in tonnage from 24,675 tons in 1904 to 65,910 tons in 1910
MANUFACTURED BY
The Buffalo Fertilizer Company
Station A., BUFFALO, N. Y.
Responsible agents wanted. Write for prices and terms.

In writing to advertisers please mention THE CORNELL COUNTRYMAN
AS AGREED ALL CLOTHES VACUUM CLEANED before they are pressed.

THE ONLY PLACE IN ITHACA

NORWOOD’S

411 East State Street : : Ithaca, N. Y.

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THE FIRST NATIONAL BANK
Cornell Library Building
Capital, Surplus and Profits $350,000.00
Oldest National Bank
Safe Deposit Boxes for Rent

PIANOS, MANDOLINS, GUITARS, BANJOS and VIOLINS
Rented or sold on Easy Payments. "Songs of Cornell," All the latest music; Strings and supplies for all instruments at lowest prices

LENT’S MUSIC STORE - 122 N. Aurora Street
Victor Talking Machines, Records, etc.

R. A. HEGGIE & BRO. CO.
Dealers in WATCHES AND FINE JEWELRY
136 East State Street
ITHACA, N. Y.

CHAS. S. SEAMAN LIVERY
HACK & LIVERY
Both Phones 87

In writing to advertisers please mention THE CORNELL COUNTRYMAN
ARE YOU AWARE OF THE FACT THAT

The Buttermakers who captured the Highest Prizes for butter at the 1910 State Fairs were users of **CHR. HANSEN'S DANISH BUTTER COLOR**.

Every one so far heard from used **CHR. HANSEN'S DANISH BUTTER COLOR** except H. E. Griffin, Browntown, Wis., whose butter was uncolored, but he used **CHR. HANSEN'S DANISH LACTIC FERMENT CULTURE**.

Here is a partial list:

<table>
<thead>
<tr>
<th>Creamery Tub Class</th>
<th>Wisconsin State Fair</th>
<th>Creamery Print Class</th>
<th>Wisconsin State Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Prize, H. E. Griffin, Browntown, Wis.</td>
<td>95.67</td>
<td>1st Prize, G. P. Sauer, East Troy, Wis.</td>
<td>95</td>
</tr>
<tr>
<td>2nd</td>
<td>O. J. Groth, Cedarburg, Wis.</td>
<td>95.5</td>
<td>2nd</td>
</tr>
<tr>
<td>3rd</td>
<td>C. B. Cook, Bloomer, Wis.</td>
<td>95.33</td>
<td>3rd</td>
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<thead>
<tr>
<th>Creamery Tub Class</th>
<th>Indiana State Fair</th>
<th>Creamery Print Class</th>
<th>Oklahoma State Fair</th>
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</thead>
<tbody>
<tr>
<td>1st Prize, H. Ostergaard, Etna, Cal.</td>
<td>95</td>
<td>1st Prize, G. P. Sauer, East Troy, Wis.</td>
<td>94</td>
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<td>2nd</td>
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<tr>
<th>Creamery Tub Class</th>
<th>Minnesota State Fair</th>
<th>Creamery Print Class</th>
<th>North Dakota State Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Prize, Theo. Peterson, Maple Plain</td>
<td>97.5</td>
<td>1st Prize, G. Krueppel, La Moura, N. D.</td>
<td>95</td>
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<tr>
<th>Creamery Tub Class</th>
<th>New York State Fair</th>
<th>Creamery Print Class</th>
<th>South Dakota State Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Prize, S. H. Northrop, Richville, N. Y.</td>
<td>97.66</td>
<td>1st Prize, E. Greenwood, Marion, S. D.</td>
<td>94</td>
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<td>2nd</td>
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**Chr. Hansen's Danish Dairy Preparations.** The Standards of the World.

<table>
<thead>
<tr>
<th>California State Fair</th>
<th>Minnesota State Fair</th>
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</thead>
<tbody>
<tr>
<td>1st Prize, H. Ostergaard, Etna, Cal.</td>
<td>95.6</td>
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**Chr. Hansen's Laboratory**

Box 1095

Little Falls, N. Y.

Our Guarantee is just as big and broad as YOU choose to make it.

**" SCALECIDE"**

applied to your fruit trees will absolutely kill SAN JOSE SCALE and all Fungous troubles controllable in the dormant season. Five years of proofs.

Prices: In barrels and half-barrels, 50¢ per gallon; 10 gal. cans, $6.00; 5 gal. cans, $3.25; 1 gal. cans, $1.00. If you want cheap oils, our "CARBOLEINE" at 30¢ per gallon is the equal of ANYTHING ELSE. Send today for free Booklet, "Orchard Insurance."

B. G. PRATT COMPANY, Mfg. Chemists. 50 CHURCH ST., NEW YORK CITY

**ALBERGER, The Caterer**

Caters to Teas, Luncheons, Dances and Banquets

MENUS FURNISHED ON REQUEST

Out-of-town Entertainments a Specialty

ALSO A FANCY BAKERY

523 E. State Street - - - ITHACA, N. Y.

In writing to advertisers please mention *The Cornell Countryman.*
Have Your Laundry Done at

THE STUDENT LAUNDRY AGENCY
422 EDDY ST.  PHONES—BELL 676, ITHACA 630
Run by Students all the Year Round

HERRON’S SHOES
Better than ever.
Our New Store Is Better and Larger
P. J. HERRON
Opp. Tompkins County Bank.

The Cornell University Brooder Gasoline Heater
IS MADE BY
TREMAN, KING & COMPANY,  ITHACA, NEW YORK

BOOK BINDERY
Start Right—Begin your File now by having your volume
of The Countryman bound at
J. WILL TREE’S 113 N. Tioga St.

BARNEY SEAMON
... HEADQUARTERS FOR...
High-Grade Clothes and Regal Shoes
146-148 E. STATE STREET
WE DO YOUR MENDING FREE
FOREST CITY LAUNDRY
E. M. MERRILL
PHONE 209 NORTH AURORA STREET
CUT FLOWERS, DECORATIVE PLANTS, etc.
The Bool Floral Co.
215 East State Street  Ithaca, N. Y.
POULTRY

Constitutionally Strong Stock for sale of the following varieties:
White Leghorn, Barred Plymouth Rock, Rhode Island Red, Brown Leghorn,
Silver Spangled Hamburgs, Toulouse Geese, Pearl Guineas.

DEPARTMENT OF POULTRY HUSBANDRY
New York State College of Agriculture
ITHACA, N. Y.

New York State College of Agriculture at Cornell University, the 
DEPARTMENT OF ANIMAL HUSBANDRY 
will dispose of its surplus live stock at PUBLIC SALE 
FRIDAY, FEBRUARY 24, 1911 
during FARMERS' WEEK 
The offering will consist of: HOLSTEIN, JERSEY and GUERNSEY bull calves 
from advanced registry dams and CHESHIRE pigs, boars, young bred sows and sow pigs 
from prize winning stock. Catalogues ready February 1, 1911. Address 
H. H. WING, Ithaca, N. Y.

Poultry Cuts

The ordinary half-tone engraving may be good enough for 
the poultry man who handles cheap stock, but cheap cuts 
ever were and never will be of the slightest use to the man 
who wishes to do a first-class business in high-grade poultry. 

We wish to call the attention of the readers of the CORNELL 
COUNTRYMAN to the accompanying cut. We have earned the 
reputation we enjoy of putting the finishing touch of Quality 
on the half-tone plates we make. Quality cuts sell the goods. Correspondence so-
licted.

++

Christy Engraving Co. 
611-618 Central Bldg. 
Rochester, N. Y.

SAMPLE OF HALFTONE WORK 
by CHRISTY ENGRAVING CO. 
611-618 Central Building 
ROCHESTER, N. Y.

In writing to advertisers, please mention THE CORNELL COUNTRYMAN
The U. S. Pays Big Dividends.

33 1/3% A WEEK GREATER PROFIT

Leslie, Mich., June 3, 1910

Previous to our buying a U. S. Cream Separator, we were churning 15 lbs. of butter per week from 3 cows, using a water separator and crocks. With the U. S. Separator we made 20 lbs. of butter in one week. Charles M. Straight.

Mr. Straight's investment as shown above, made him 33 1-3 per cent extra profits weekly. It was just like finding money for Mr. Straight, after using the U. S.

Just think what the purchase of a U. S. Separator would mean to you. It would amount to even greater profits if you have more than 3 cows. With 2 to 200 cows, it's all the same—the U. S. will pay in the same proportion.

The eleven different capacities and prices of the U. S. Separator allow you a great assortment to select from.

Won't you let us figure with you on your dairy proposition? We want you to begin increasing your profits at once. Let us know the number of cows you milk, how you are now handling the milk, etc. We are here to help you. Ask for illustrated catalog 39 and learn how other dairymen have been "put right."

The Happy U. S. Girl

Vermont Farm Machine Co.
Serving Dairymen 38 Years.
BELLOWS FALLS, VT.
Give Your Cows a Square Deal

What would you think of a farmer who would thresh his grain with a machine that would carry off one bushel in every four with the chaff?

Wouldn’t think much of his judgment, would you?

Then what do you think of a man who still skims milk by the old-fashioned “setting” system and loses about one pound of cream in every four?

Any creameryman will tell you that with a

DE LAVAL Cream Separator

you can get as much cream from three cows as you can from four by any gravity setting process, and besides, you will have nice, fresh, sweet milk to feed to your calves.

Ask us to prove it. Try a DE LAVAL at our expense. Write for particulars about our free trial plan.

The DE LAVAL SEPARATOR CO.

165-167 Broadway
NEW YORK
173-177 William Street
MONTREAL

42 E. Madison Street
CHICAGO
14 and 16 Princess Street
WINNIPEG

Drumm & Sacramento Sts.
SAN FRANCISCO
1016 Western Avenue
SEATTLE

PRESS OF W. F. HUMPHREY, GENEVA, N. Y.
The Cornell Countryman

DECEMBER, 1910
Every farmer knows the value of a good Manure Spreader—saves time and labor.

The "Easy Loader" Spreader....

meets every requirement. It is easy to load—either side lets down. No complicated parts. Almost entire steel construction gives strength and lightness. The "Easy Loader" always distributes the load evenly the full width of the swath it is designed to spread, no matter if the Spreader is unevenly loaded.

Our catalog and special booklet, giving detailed information on this Spreader, will be sent free upon request.

Grain Binders, Corn Binders, Reapers, Mowers, Rakes, Tedders, Manure Spreaders, Hay Loaders, Side Delivery Rakes, Disc Harrows, Orchard Harrows, Spring and Spike Tooth Harrows.

THE JOHNSTON HARVESTER CO.

BATAVIA, N. Y.
OFFICIAL PUBLICATIONS of CORNELL UNIVERSITY

Issued at Ithaca, N. Y., monthly from July to November inclusive, and semi-monthly from December to June inclusive.

(Application for entry as second-class matter at the post office at Ithaca, N. Y., pending.)

These publications include the annual Register, for which a charge of twenty-five cents a copy is made, and the following publications, any one of which will be sent gratis and postfree on request:

- General Circular of Information for prospective students,
- Announcement of the College of Arts and Sciences,
- Announcement of the College of Civil Engineering,
- Announcement of the College of Agriculture,
- Announcement of the Medical College,
- Announcement of the New York State College of Agriculture,
- Announcement of the Winter Courses in the College of Agriculture,
- Announcement of the New York State Veterinary College,
- Announcement of the Graduate School,
- Announcement of the Summer Session,
- The President's Annual Report,
- Pamphlet on prizes, samples of entrance and scholarship examination papers, special departmental announcements, etc.

Correspondence concerning the publications of the University should be addressed to

The Registrar of Cornell University

ITHACA, N. Y.

New York State College of Agriculture at Cornell University

L. H. Bailey, Director.

The College of Agriculture is one of several co-ordinate colleges comprising Cornell University. The work of the College is of three general kinds: the regular teaching work of undergraduate and graduate grade; the experiment work; the extension work. The resident course of instruction falls in the following groups:

1. Four-year course, leading to the degree Bachelor of Science in Agriculture (B.S. in Agr.). When desired, the last two years may be chosen in subjects pertaining to landscape architecture and out-door art, or to home economics. In the Graduate School of the University students may secure the Master's and Doctor's degrees (M.S. in Agr. and Ph.D.).

2. Special work, comprising one or two years: (a) Agriculture special; (b) Nature-study special or normal course.

3. Winter-Courses of 12 weeks: (a) General Agriculture; (b) Dairy Industry; (c) Poultry Husbandry; (d) Horticulture; (e) Home Economics.

THE INSTRUCTION IS DIVIDED AMONG TWENTY DEPARTMENTS AS FOLLOWS:

<table>
<thead>
<tr>
<th>Department</th>
<th>Department</th>
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<tr>
<td>FARM PRACTICE</td>
<td>POMOLOGY</td>
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<td>FARM MANAGEMENT</td>
<td>ANIMAL HUSBANDRY</td>
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<td>and FARM CROPS</td>
<td>POULTRY HUSBANDRY</td>
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<tr>
<td>AGRICULTURAL CHEMISTRY</td>
<td>DAIRY INDUSTRY</td>
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<tr>
<td>PLANT PHYSIOLOGY</td>
<td>FARM MECHANICS</td>
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<td>PLANT PATHOLOGY</td>
<td>RURAL ART</td>
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<tr>
<td>SOIL TECHNOLOGY</td>
<td>HOME ECONOMICS</td>
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<td>PLANT BREEDING</td>
<td>METEOROLOGY</td>
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<tr>
<td>ENTOMOLOGY and INVERTEBRATE ZOOLOGY</td>
<td>RURAL ECONOMY</td>
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<tr>
<td>HORTICULTURE</td>
<td>EXTENSION TEACHING</td>
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</table>
It Will Interest

Ag. Men to look up our new rebate system 5%. No prolonged dividends, but a definite rebate on every cash purchase.

This plan is in use at all our stores and will save you the price of many a book and article this fall.

The Corner Bookstores

SHELDON COURT

Eddy Street State Street

The Improved Simplex Link Blade Cream Separator

LIGHTTEST RUNNING
LARGEST CAPACITIES
CLOSEST SKIMMING

The Only Practical Large Capacity Separators

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

500 lbs., $75.00  900 lbs., $90.00
700 lbs., 80.00  1100 lbs., 100.00

D. H. BURRELL & CO.
LITTLE FALLS, NEW YORK
Manufacturers of Creamery, Dairy and Cheese Factory Apparatus
**Growers' Special Price List**

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<tr>
<th>WIZARD BRAND MANURES.</th>
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<tr>
<td>Pulverized Manure</td>
<td>Pulverized Manure</td>
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<tr>
<td>Shredded</td>
<td>Shredded</td>
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<tr>
<td>In Bags</td>
<td>In Bags</td>
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<tr>
<td>Sheep</td>
<td>Sheep</td>
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<td>Hog</td>
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<tr>
<td>Cattle</td>
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<td>Cattle</td>
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<tr>
<td>100 lbs... $1.50</td>
<td>1,000 lbs... $11.00</td>
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<td>$1.50</td>
<td>$11.00</td>
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<td>$1.35</td>
<td>$9.50</td>
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<td>$1.20</td>
<td>$8.00</td>
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<td>500 lbs... 6.00</td>
<td>2,000 lbs... 18.00</td>
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<td>6.00</td>
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<td>5.50</td>
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<td>5.00</td>
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</table>

F. O. B. Buffalo, add 22c per Hhd. lbs. freight. Always carried in stock. Pure Bone Meal, 167 lb. bags, $2.00 per 100 lbs. $35.00 per ton.

**INSECTICIDES—We Handle All Kinds**

- Nico-fume, Nicotine, Tobakine, Tobacco Dust, Grape Dust, Slug Shot, Rose Leaf Extract, Lemon Oil, Arsenate of Lead, Aphine and Wilson's Plant Oil at regular market prices. Sprayers, $3.00 to $6.00 each.

**WM. F. KASTING CO., Buffalo, N. Y.**

**Registered Guernseys**

Several cows, heifers and Calves. Also bulls of serviceable age. If you want good ones, write me for prices and descriptions.

**W. ROBERT DUNLOP**

FAYETTEVILLE, N. Y.

---

**The Official Babcock Tester**

Invaluable to the Dairyman seeking to develop his herd to the highest profitable production. Also used in hotels, restaurants, laboratories, and doctors' offices. Furnished with full complement of accurate glassware, acid and full directions for making tests. 2 and 4 bottle sizes. Can be clamped to table or screwed down. Circular and prices on request.

We are the largest manufacturers of dairy and creamery machinery and supplies in the world. High grade goods only. Complete outfitters of all plants for handling milk products. Catalogue on request.

**CREAMERY PACKAGE MFG. CO.**

CHICAGO, ILLINOIS

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In writing to advertisers please mention THE CORNELL COUNTRYMAN
WHY HAVE POOR MILK?

You do not expect poor, impoverished land to yield big crops and abundant harvests. Is it then any more reasonable to expect poor milk impoverished by uncleanness to produce good butter and cheese?

Quality once taken away cannot be restored. Poor milk has a value but not one equal to good clean milk. You doubtless use WYANDOTTE Dairyman's Cleaner and Cleanser.

Why not then, tell the patron what it has done for you? Show him its cleansing and sweetening properties and how freely it rinses leaving no flavor or residue. Tell him of its purity and why it makes no suds. Tell him also of its excellence as a household cleaner. Help him so that he may help you.

Order from your supply house.

THE J. B. FORD CO., Sole Manufacturers
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DECEMBER, 1910

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CONTESTANTS IN THE STUDENT'S JUDGING CONTEST AT THE NATIONAL DAIRY SHOW, OCTOBER 21, 1910. PHOTOGRAPH TAKEN AT CLOSE OF CONTEST WHILE THE AYRSHIRE COWS WERE YET IN THE RING.
DAIRYING is the most important branch of agriculture in this state. The last available census figures, which are for 1900, show about one and one-half millions of cows, one-third million heifers, one-half a million calves, and a total value of dairy products of over fifty-five millions of dollars. The estimates of the United States Department of Agriculture for 1910 show about one and three-fourths million cows and nearly 900,000 other cattle. With a long lead New York State stands ahead of all other states when compared on the basis of dairy production.

Dairying is destined to continue the most important branch of agriculture in New York state because:

1. The people must have milk; they will also have butter and cheese. This is a state of large population and it is rapidly becoming still more populous. There are now nearly nine million persons in New York State,—most of them in cities and towns. The following shows how quickly the dairy market increases with the increase of population. In 1899, the daily average number of forty quart cans of milk received in the New York market, over different railroads, was nearly 26,000. In 1908, it was more than 41,000. The market is here.

2. This state is preeminently adapted to dairying. Its fertile hills and valleys, cool springs, clear streams, many ice ponds, grain and forage crops, and its present dairy development, all point to great activity in dairying in the years to come. The facilities are here.

3. From now on dairying will be conducted more and more as any business is conducted. There is to be a more definite relationship between the cost of production and the selling price. Economic laws, which no force can change, will provide a margin of profit in dairying that is comparable with that in other industries. We have not seen the profit in the past, chiefly because of competition in the west whence free fertility has been sent east in the form of all kinds of farm crops. But now the west begins to realize the true value of fertility.

The character of our dairying is destined to change much in the coming years, and chief among the changes we shall see:

1. More pure-bred and high-grade cows. These will help to reduce the average cost of production and their number will be increased by associations of breeders and so-called cow testing associations and the efforts conducted privately by hundreds of highly intelligent farmers. Today there are more than 3600 owners of pure-bred cattle in this state. It is a modest prophecy to say that this number will be trebled within the next few years.

2. More success in dealing with bovine tuberculosis. This disease is causing great loss to our dairymen because of reduced production and
deterioration of the animals affected. Its control is the dairymen’s great problem. They will learn that affected herds may be successfully handled without too serious loss and with positive assurance of getting rid of the disease.

3. More winter dairying. Cow owners will learn that it is profitable to produce milk through the winter, thus prolonging the lactation period.

4. More care in keeping milk clean and cold. In New York State great strides are being made in this respect. Much more improvement is to come as we learn more about the fundamental principles of sanitation.

5. More selling of milk on the basis of its fat content. The milk market will never be in satisfactory condition until buyers recognize that all milk is not alike and become willing to pay better prices for better qualities. The fact that practically all milk today sells for the same price is the chief force in reducing the average quality of milk in this state.

The changes are to be instituted by those dairymen who are least tied to old methods. Most prominent among them are the younger dairymen and it is a pleasure to write that many dairymen in New York who are old in years are young in the meaning of this sentence. Just as the youngest city in the far west is found to have the most modern school buildings, street car system, electric lighting and water supply because that city when it began was not handicapped by antiquated equipment, so the younger dairymen who are free to act will be the ones most readily to take up the latest improvements in dairy work. There are nearly 200,000 farms in New York having dairy cows. This means that about 8000 men enter upon dairy farming anew every year. The future of dairying in New York State depends upon them.

COOPERATION IN DAIRYING

By J. D. Frederiksen

President of the New York State Dairymen’s Association

THE outcome of the industrial revolution through which we are passing and which at times presents an aspect of great danger to society, on one hand threatening to lead into a new feudalism, on the other facing socialism or anarchism, is the burning question of the day and one that must be solved before long. All agree that in many undertakings the large corporation handles the business more economically than the individual worker or the small employer and there is no possibility of turning back from the rapid development towards combination in business which is now going on. The problem before us, therefore, is to lead such development in a direction of least danger and of greatest possible benefit to the community.

Fortunately we have a solution which eventually will save us from domination of the Trusts as well as from oppression of socialism. The remedy is co-operation, and in no other industry is it more desirable or easier of application,—in no other line has it already proven more successful,—than in the dairy industry. This applies to dairy farming as well as to the manufacture of butter and cheese.

Many earnest and enthusiastic advocates of progress in farming believe that to take advantage of modern machinery and methods it is necessary to have larger farms under one management and that the development in farming and in the industries connected with dairying must drift towards the trusts at the sacrifice of individual ownership and individual business. I believe this idea to be entirely erroneous. Not only is there no economic necessity for such a development, but I am firmly convinced that the “trusts” related to the dairy industry which are already in existence, the large combinations
JERSEY BULL, "KING OF ARDEN"

Noted prize winner imported by F. S. Peer for H. N. Higenbotham, of Joliet, Ill.

Courtesy of F. S. Peer.
of creameries, and the great city milk supplies, must sooner or later give way to co-operation of producers. And I am optimistic enough to believe that the great industry in which we are specially interested is destined to lead the way for many other industries to follow.

Co-operation in dairying does not mean commission,—it does not mean division of property or sacrifice of ownership; it does not mean abandonment of the incentive and encouragement found in individual production. It means a greater chance to give undivided personal attention to certain phases of the industry and to have other duties among the many with which the dairy farmer must cope, taken care of to better advantage and at a larger profit than he is able to do it alone. It means more capital and greater skill at his service,—in fact, it gives the individual small producer all the advantages of the trust without its evils and without the sacrifice of individual ownership or identity.

Among the phases of dairy farming in which co-operation may profitably be applied the following are perhaps the most important ones.

**Cow Testing Associations** engaging an expert to periodically test the amount of, and the percentage of fat in, the milk of each cow in the herds of the members, have already been established and more are soon to come. The individual farmer has no time and cannot always afford to hire a reliable person to do the testing and so a number of dairymen unite and divide the expenses. The expert spends 24 hours at each farm every two or three weeks, weighs and "Babcocks" the milk of each cow morning and evening, weighs and computes the feed and keeps the record so that at the end of the year the dairyman will know what each cow has done for him and whether it has paid for its food or not. This is one of the most powerful means of increasing the yield and improving the herd. It makes the farmer interested in every cow and creates a healthy rivalry among the members of the association.

**Breeding Associations.** In breeding, one-half of the result is due to the male and with a thoroughbred bull of fine quality a herd of milk cows can soon be improved. The individual farmer can, however, seldom afford to buy an expensive bull, but ten to twenty dairymen can afford to purchase one together.

**Associations for the Purchase of Concentrated Feed Stuffs,** is another line of co-operation which has been successful in many places.

**Co-operative Creameries and Cheese Factories** have been in existence for more than thirty years and make some of the most successful institutions. In Wisconsin and Minnesota they hold their own in competition with the large "Centralizers" which command almost unlimited capital and everywhere the co-operative whole milk creameries make the best butter. In Denmark the system has been universally introduced and magnificent modern creameries have been built without investment of capital by the farmers, the banks furnishing the funds at low interest and without ever losing a dollar. For, there is no better security than the combined guaranty of a number of dairy farmers and the loans are gradually paid off by the creation of a sinking fund which is maintained by leaving in the treasury a fraction of the amount due for milk.

The success of these creameries naturally induced the dairy farmers to further cooperation, and large **Cooperative Slaughter houses** have been established by the Danish farmers where they find an outlet for their hogs which make up a large portion of the receipts from the dairy.

There is one branch of the dairy industry that is exceedingly well adapted for cooperation and still but little systematized in that direction. I refer to the **City Milk Supply** which, when it is not in the hands of a trust, is usually carried on with little regard for economy. It should be organized so that three or four
milk wagons would not go up and down a street where one could do the work and so that thoroughly sanitary methods would prevail for the benefit of producer and consumer alike. There is a large field for cooperation urgently in need of the introduction of the system.

The one inexorable condition for the success of any of these institutions is that all members shall stand shoulder to shoulder sharing alike in the benefits as well as in the risks and expenses of the undertaking. Whenever so-called cooperative associations have been started by individual promoters who have tried to incidentally grind their own axes they have been failures. But where the true cooperative spirit prevailed they have proven eminently successful and gradually as the necessity of such absolutely mutual solidarity is understood by the people, cooperation in dairying will surely be universally introduced.

COOPERATIVE COW-TESTING ASSOCIATIONS

By E. S. Savage
Assistant Professor of Animal Husbandry, Cornell University

“MY cows are paying me more money than they did last year.” This expression, quoted in a letter from R. W. Redman in charge of cow-testing work in Maine, represents the consensus of opinion as to the value of the work to the farmers in that state. From association records from many states very little dissatisfaction with the value received from the testing work is found. The few, who have expressed dissatisfaction have invariably been the poorer dairymen in the associations concerned. As an additional benefit to the community, one of the associations in Maine has been doing considerable cooperative purchasing in connection with its testing work. The members of this association in 1908 and 1909, purchased sixteen cars of grain and three of pressed hay. The next winter it was not necessary to do this, as the local dealer considered it to his advantage to keep prices so low that cooperative purchasing by the members was needless, and thus the whole community was able to purchase feeding stuffs at reduced price. After an association has been firmly established, the benefits can be increased just as fast as the leaders may plan the courses of operation. The benefits to be derived along feeding and breeding lines, if efforts are well directed, are incalculable.

HISTORY AND PLANS OF ASSOCIATION

WORK UP TO THE PRESENT TIME

The first associations were started in Denmark about sixteen years ago. In five years there were 170 in operation in that country. There are today in Denmark about 500 associations, in Sweden as many more, and in Norway and other countries in Europe several hundred. Dairy work in these countries is much better organized than in the United States and cooperation in all lines of agriculture is much practiced. In contrast to the 170 cow-testing associations in Denmark at the end of five years after the beginning of the movement, there were in the United States, five years after the first association had been formed, only 29 such associations. The farmers in the United States seem to be adverse to cooperation along any line, apparently for two main reasons: the agricultural population is too scattered, and there is a lack of leadership in farming communities. As far as the cow-testing associations are concerned, the latter seems to be the better explanation.

In Canada, about sixty cow-testing associations have been formed. They are not self-supporting, but are supported entirely by the government, except that each farmer must equip himself with necessary scales, sample bottles and sampling dipper. In the
The organization of an association is brought about by a few men in a community who become interested in the work. A meeting is called to which all the farmers of the community are invited. A temporary organization is effected and a soliciting committee appointed. When the committee has secured a list of farmers having a sufficient number of cows to keep a tester or supervisor busy, a permanent organization is effected and a set of by-laws adopted. A supervisor and outfit are then secured and the work of the association is started. The supervisor usually is furnished with the following outfit upon beginning his actual work in the field:

1. Babcock tester, usually the 12 bottle size.

2. Necessary glass-ware for use in testing, which includes milk-test bottles, pipettes, acid measure and dairy thermometer.

3. Supply of sulphuric acid which can ordinarily be secured from the local creamery.

4. A 60-lb. spring balance scale made to weigh in tenths.

5. Thirty to forty wide-mouth bottles to contain samples of milk taken.

6. A pail for weighing milk.

7. One sampling tube with opening at least three-eighths of an inch in diameter or a sampling dipper made to hold one ounce.

8. A supply of record blanks.

9. Suitable cases in which to transfer the above outfit from place to place.

In Mr. Rabild's plan, twenty-six is the usual number of farmers in an association. The supervisor visits each herd once a month, making a test of each cow and keeping an accurate record of the feed consumed and the milk yielded by each cow for
one day. From this day's record there is computed each month the profit or loss to the owner from each animal. From these records a fairly reliable approximation can be made of the profit or loss to the farmer from his herd each year. The relative value of the different animals is thus established and a good basis of selection made from which the farmer may work in breeding up and improving his herd. The cost to the farmer is usually $1.00 per cow per year for the tests and the computation of results by the supervisor for the association.

Opportunities in New York State

In the opinion of the writer it is time New York farmers actively undertook cow-testing work. Some progress has already been made by the New York State College of Agriculture, but the work has been restricted because of the lack of funds. The State Commissioner of Agriculture has given much thought to this question and the State Dairymen's Association has considered the advisability of forming cow-testing associations. In the beginning made at the College of Agriculture, two departments have been interested. The department of Animal Husbandry has published a pamphlet on the formation of cow-testing associations, promising aid in organization of associations when called upon. The department of Dairy Industry has organized association work in connection with its skimming stations near Ithaca and has had very satisfactory results. The work by the Dairy Department has been without cost to the patrons. Two associations have been formed in the State, one at Delhi, New York, in connection with the Cooperative Creamery, and one at Alfred, New York. Mr. A. J. Nichol has done much to advance the interests of the farmers at Delhi and Professor W. T. Crandall of the State School of Agriculture at Alfred, New York, has been active among the dairy farmers in that section.

However, more needs to be done. It is hoped that funds may soon be available for the promotion of this much needed work in New York State. The results in other states and countries place this work beyond the experimental stage. It is the writer's opinion that this is a most profitable field for college extension. It is primarily educational and is a logical part of the extension activities of the State College of Agriculture. The experience in other states, notably Wisconsin, has shown that there should be a definite state policy in regard to the cow-testing associations.

In New York State there are in round numbers 1,800,000 cows, about one-tenth of the cow population of the United States. New York ranks tenth in average production of milk per cow, with 4378 pounds per year. There is no reason why New York cows should not yield at least 6000 pounds of milk per year on the average and the state rank first in average production in the United States. The formation of many live cow-testing associations will help to
raise our average by the elimination of unprofitable cows. Such associations will be effective only when the farmers themselves create the demand for them and they are so organized as to be practical in operation, economical, reasonably accurate, educational, and profitable.

Plan for Cow-Testing Associations in New York State

The New York State College of Agriculture agrees to furnish a supervisor to any body of farmers in the State upon satisfactory assurance that they will have at least one thousand cows to be tested during a period of one year. Such a group would be expected to have a definite organization as here suggested.

Organization

1. This body of men shall constitute the cow-testing association of the community in which they live.

2. This body shall have the customary officers of such an association, viz.:—president, secretary, treasurer, and board of seven directors, of which the president and secretary shall constitute two members.

3. The secretary of the association shall be the supervisor furnished by the State College of Agriculture.

4. Any farmer may become a member of the association of his community upon entering one or more cows for one year’s test.

5. The fee for one year’s record shall be $1.00 for each cow, one-half payable to the treasurer of the association at the time of entering the animal, one-half payable at the end of the first six months of the record.

6. The cost of the association for the services of the secretary shall not exceed $750.00 per year for the work involved in testing and keeping the records of a maximum of twelve hundred cows.
HOLSTEIN COW "GLISTA TAU" CORNELL UNIVERSITY HERD. AVERAGE YEARS RECORD FOR 3 YEARS PREVIOUS TO SEPTEMBER, 1910, 256.8 LBS. BUTTER FAT. THE DIFFERENCE IN DAIRY CONFORMATION OF THESE TWO COWS WOULD NOT INDICATE THE DIFFERENCE IN RECORDS.

7. From the remaining money coming into the association each year, suitable quarters shall be provided for the secretary to do his work and he shall be provided with suitable apparatus, record sheets, etc., for his work. If possible these quarters shall be in connection with a public building so that they may serve as a meeting and resting place for farmers who are members of the association. It shall be arranged, where possible, that these quarters may be open during each day, whether the supervisor is present or not, and in the evening as much as possible. In general, the thought is that the rooms of the association shall be the Farmers' Club of the community.

8. The association shall furnish each member with a suitable milk scale, record sheets for the tabulation of each day's milk and feed, for periods of one month, and sample jars for a composite sample of each cow's milk each month.

DUTIES OF THE OFFICERS

1. The duties of the president, treasurer and board of directors shall be the customary duties of the officers of such associations.

2. The duties of the secretary shall be as follows:

a. He shall be at the service of each individual member of the association at all times so long as this individual attention does not work to the detriment of the association as a whole.

b. He shall test the composites furnished by the members each month, work out the number of pounds of fat produced by each cow per month, work out the cost of her food, and determine the profit or loss returned to the owner by each cow each month.

c. He shall keep these records in duplicate. One set shall be for his own use, ultimately to become the property of the State College of Agriculture. The other set shall be sent...
to the members each month for their permanent records.

d. He shall act as the representative of the State College of Agriculture and of the agricultural interests in the community and shall refer to the proper authorities any question which he cannot answer himself.

e. He shall visit the farm of each member of the association as often as once each month if possible, not as an inspector but to give helpful suggestions in the arrangement and feeding of the herd.

f. In case the secretary suspects fraud in the composite samples or monthly records of any members, he shall have the right to make a personal check test at the farm whenever and for whatever length of time he may desire. He shall be authorized to report his findings to the board of directors with recommendation.

DUTIES OF THE MEMBERS OF THE ASSOCIATION

1. Each member shall keep careful records of the production and feed of each cow:

a. By weighing the milk produced by each cow at each milking.

b. By weighing the grain fed to each cow each day and such roughage as silage, roots, etc., and by estimating the amount of hay fed to each cow each day.

c. He shall take a three-day composite sample from the milk of each cow and deliver the sample into the hands of the secretary of the association.

3. At the end of each month he shall send to the secretary the record of the milk produced by each cow during the month and the record of all feed consumed by each cow during the month.

4. He shall pay to the treasurer of the association $1.00 for each cow entered by him in the records of the association for the term of one year, payable as above mentioned in Section 5 under "Organization."

The subject matter of the above plan can be incorporated in the By-laws of the association when formed, the plan being modified to suit the conditions of any particular com-
community. More or less money would be necessary for supplies on the organization of each association. The State College of Agriculture would furnish this money at the start, later to be reimbursed by the association. Lack of interest at the beginning of its second year may result in withdrawing from the association the support given by the college authorities. In this age, farmers should have a spontaneous interest in movements such as this, which have demonstrated their value.

The work of cow-testing associations would be conducted according to the above plan as a department of a grange or any other agricultural organization, or in connection with proprietary creameries or condenseries. Since the plan does not call for the definite visit of the supervisor to each farm at any stated time, the semi-official testing work of the breeders' associations can be combined to the mutual benefit of the farmer owning pure-bred stock and of the cow-testing association, in that the cost of the official inspections could be reduced and the money paid for the inspections revert to the testing association. Thus, farmers could be encouraged to keep more pure-bred dairy cows and to market them with semi-official records to great advertising advantage.

Pictures and records of the leading cows of the four great dairy breeds are shown in this issue to illustrate the ideal to which the breeders of the different breeders' associations may aspire. Illustrations are also given of two cows in the herd of the New York State College of Agriculture, equally good in appearance but which have yielded largely different amounts of fat under like conditions of care and management. Only some careful record of production would reveal the difference in the productive value of these two animals.

The writer is aware that the full realization of such a plan among a community of farmers is ideal and difficult of attainment. The educational possibilities of such associations, however, would seem to justify their general introduction.
IN the death of Professor Brewer, of Yale, early in November, the country has lost one of its earliest teachers of agriculture and also one of its most versatile and interesting characters.

Mr. Brewer was born in Poughkeepsie in 1828. He was graduated with the first class of the Yale Scientific School; in subsequent years he continued his studies abroad, part of the time under Liebig. He was early interested in agricultural education, being one of the most prominent of the pioneers of the present order of agricultural institutions. As early as 1851, he had charge of an "agricultural institute" or school in Erie County, New York. In 1852 he became connected with the Ovid Academy, at Ovid in Seneca County, New York, an institution that later became the seat of the first New York State College of Agriculture. He remained at Ovid until 1855, then went to Europe, and returned to the Academy in 1857, remaining a year but not until the agricultural work began; but he was connected with the institution during much of the period when the agitation that led to the real founding of agricultural colleges was in progress. In 1864 he became professor of agriculture in the Sheffield Scientific School at Yale, a position that he held for forty years, covering the epoch of the organization and development of the great chain of land-grant colleges devoted to agriculture and the mechanic arts.

During all these years and until his death, Professor Brewer was a man of many interests. He was geologist, mining engineer, chemist, botanist, forest, sanitarian, explorer, art critic, publicist, and long an authority on stock-breeding. Mt. Brewer in the Sierras bears his name. He was president of the Arctic Club of America, and served as member of many commissions and boards, one of them being the Scientific Survey of the Philippine Islands. He was author of the Botany of California, in two volumes, having been First Assistant on the California Geological Survey in 1860–1864. He is commemorated in the names of several plants, as Carex Breweri, Astragalus Breweri, Antirrhinum Breweri, Cirsium Breweri, and others. He was not only interested in many diverse lines, but he became eminent in them. In all these activities, he kept his interest in agriculture, and particularly in stock-breeding, well to the front. In "American Men of Science" he is starred as one of the one thousand leading men in North America in the natural and exact sciences, this position being retained in the second edition of the directory, recently issued. He was a forceful lecturer, sympathetic companion, and a picturesque personal figure.

Professor Brewer's boyhood was spent in and near Ithaca, N. Y. The father removed from eastern New York to a farm in Enfield, just west of Ithaca, soon after the birth of the son; the son attended the old Ithaca Academy, and thence went to Yale, long before the founding of Cornell University. An uncle of Professor Brewer also settled in the Enfield Valley, and descendants now reside in Ithaca. Professor Brewer made frequent visits to the old places until very late in life.

The passing of Professor Brewer removes one of the few remaining links between the old order and the new in agricultural education. He brought high accomplishment to his work.
JERSEY COW FIGGIS 76106, NO. 4 REGISTER OF MERIT.

Seven day record 293 lbs. 7 oz. milk; 16 lbs. 1.3 oz. butter fat. Champion and grand champion in show ring at St. Louis Exposition in 1904. Died Nov. 23, 1909 at the age of 18 years, 6 months. Owned by Hood Farm, Lowell, Mass.

Courtesy American Jersey Cattle Club.

JERSEY COW ROSAIRE'S OLGA 4TH'S PRIDE 179509

Yearly record 14,104 lbs. 13.6 oz. milk; 836 lbs. 8 oz. butter fat.

Courtesy American Jersey Cattle Club.
JERSEY COW JACOBA IRENE
Bred by J. M. Shrader, St. Joseph, Mo. Owned by A. O. Auten, Jerseysville, Ill. Yearly record 17,358 lbs. 3.2 oz. of milk; 952 lbs. 15.4 oz. butter fat.

Courtesy The Jersey Bulletin.
THE PACIFIC NORTHWEST FOR THE DAIRYMAN

By A. Stone, ’04
Manager of Willowmoor Farms, Redmond, Washington

The dairy district of the Northwest lies west of the Cascade Mountains, in the Willamette Valley, Oregon, and the Puget Sound country of Washington. This region has been lauded by visiting dairymen, dairy writers, government experts and foreign visitors as the ideal home of the dairy cow, the country with the greatest dairy future before it. The writer after a residence of two years is sharing the same feeling.

The factors concerned in the making of this Northwest the greatest dairy district in America are climate, soil and location with reference to markets. The climate is the most important feature and the one most peculiar to this region. Its chief advantage is its equability, cool summers and mild winters, together with an abundance of light rainfall. The mid-summer days are never excessively warm, the nights are always cool and the winters are more wet than cold. It freezes but little and the grasses remain fresh and green the season round, so much that it is a common practice among the old time ranchers to range their cows the year round, supplementing winter grazing, but not to exceed four months, with hay but no grain. The production following such a practice is astonishing, especially so in view of the class or kind of cows usually kept. This possibility of grazing cattle throughout the year, while not to be commended for cows in milk, is of great importance in the handling of dry stock and young animals. Our own practice is to keep all young stock out-of-doors as much as possible. Young calves after a week or so old are out except in the severest weather and after three to four months old they are only housed at feeding time, and from six to seven months, they are turned away to range until approaching the time of freshening.

The only supplementary feeding necessary is about four months when they are fed hay once per day in racks under covered sheds extending along the sides of hay barns located in the pasture. They are also grazed between three and four months but not to exceed three pounds per animal per day. The labor cost of winter care for upwards of 100 head does not exceed fifty cents per day. The stock, fed and handled in this way, develops into larger, healthier and better animals than can be produced in the dairy sections of cold winters with excessive cost of winter care and maintenance.

The milking herd can be profitably pastured for eight months on well drained soils and on few farms are they stabled nights more than four months and never over five. And in the stables there are no difficult problems of ventilation; windows are never all closed and the doors are open more often than closed. Our own stable is equipped with the King System, but it is rarely of any use.

The cropping systems possible under the above climatic conditions are especially adapted to dairy feeding. The season is long yet the weather averages so cool that none of the cereals mature for grain excepting oats and barley. They all make a tremendous growth and are as a consequence much more valuable for grain feeding and are available over long periods. Corn is not as successful, the seasons averaging too cool for its proper development; yet it produces a large tonnage per acre. And because of its slow growth or through some other climatic influence, it makes a better quality silage than
would corn at the same stage of maturity in the corn belt. All the clovers grow naturally and are extensively cultivated. Vetch sown with one of the winter cereals is also very much in favor for either hay, silage or soiling purposes. All grasses and other forage crops mature too early to be successfully handled for hay and must be kept back in some way to July or August. The common practice among the old ranchers is to pasture until the latter part of May or even into June, then mow for hay in July and again pasture in the fall. The more rational way is to use the early and late growth for silage or soiling purposes. Pasturing early and late on the average soil works injury to the future crop. However, whether pastured or cut, the point is that all clovers, grasses and other forage crops produce during the season a large amount of feed.

Possibly the most peculiar advantage derived from the climatic conditions with reference to forage crops is that of kale, Thousand Headed Kale. It belongs to the cabbage family and is cultivated in much the same way. The seed is sown in beds in March or April and then transplanted into the field in June or by the first of July. It remains in the field and continues to grow all winter; our winters apparently have no effect upon it. It can be fed from October to April, thus affording to the dairyman a fresh, succulent feed, high in protein and fat, for six months during the winter season. The climate is thus wonderfully favorable to the growth and development of young stock, to the management of the dairy herd and to crops especially valuable for dairy feeding.

The soil on lands adapted to cultivation while variable is deep and rich. The uplands will be valuable for grazing. The country is so new that the soil is practically virgin. In fact, it has not yet reached its highest point of productivity. There are at the present time in western
Washington less than five hundred thousand acres of cleared land and over two million acres of logged off land awaiting development. All crops adapted to the climate reach a maximum production. If dairying can profitably build up worn out soils, dairying on virgin soils under the above conditions should be and always remain to be a most sound and profitable industry.

The highest success in dairying is dependent on market facilities, both for the purchasing of the necessary concentrates and the disposal of the products. The Northwest occupies a unique and enviable position in this respect. To the east and south is one of the greatest grain and alfalfa districts of the United States. The natural outlet for this vast product is through the Pacific ports which bring to the door of the dairymen of this Northwest an unlimited supply, at the lowest prices, of mill products and alfalfa. A new and very important mill product is the soy bean oil meal, a by-product of the soy bean grown in Manchuria and Korea. This meal is coming to be recognized as the most valuable of the oil meals. It is credited with 46 per cent protein and 10 percent fat and does not have the laxative or irritating effect of the other oil meals on the bowels. Because of the low rates of water transportation this meal is now sold throughout the Northwest at a comparatively low cost. The Northwest has a corner on this new feed, since the whole amount imported to this country arrives at Seattle, Washington, and the supply has not yet met the rapidly increasing local demand.

The market for the dairy products is practically world-wide; vessels leave the Northwest ports for all points up and down the Pacific Coast and the far East or Orient. Alaska is and will continue to grow as a big market for all products of the dairy. Milk for this export trade must necessarily be condensed and the growth of this trade is seen in the establishment of the condenseries throughout this region. The creameries also handle a great deal of raw milk. At the present time there are about twenty condenseries and two hundred creameries in operation in the state. The competition between the factories and the demand for local and home consumption results in uniformly high prices to the producer and this competition is increasing. In fact the demand or market is developing more rapidly than the production. The opportunities in the Pacific Northwest for the dairymen are truly exceptional.

The natural factors are all here; what is further needed for its greater development is more and better cows and more and better dairymen. The dairymen are coming each year from the East. The greater problem is more and better cows. Any old kind of a cow is at a premium, cows not worth $40 bring $100 and good cows are not to be had at any price. The solution of this problem must come from grading up by the use of pure bred bulls. And again the supply is far short of the demand. Recent figures in the Horn and Hoof Livestock magazine credit the states of Washington and Oregon with only ten herds of Holsteins, six of Jerseys, six of Ayrshires and three of Guernseys. There are a large number of new beginners in all four breeds and every breeder of pure bred stock is flooded with inquiries he is unable to take care of. Coupled with the local demand for pure bred bulls and foundation herds is the foreign trade with Japan, South America, Hawaii and other points in the Pacific. This foreign demand will care for any surplus for years to come. The ports of the Northwest are the logical shipping points for this cattle trade and the foreign buyers prefer local stock as it is larger, better developed, and what they can buy is of the right quality. The opportunities for the breeder of pure bred cattle are greater than in any other section of the United States.

A recent article appeared in one of the local dairy papers entitled "The Changing Popularity of Breeds."
writer points out that the advent of the farm separator, the condensery, and the increased price of dairy by-products have created a sentiment and demand in favor of the heavy milk-producing strains as against the so-called butter breeds. His reasoning is correct and the conclusions drawn are typical of the conditions today in the Northwest. The heavy milk producing cows of the Holstein and Ayrshire breeds are in the greatest demand. Climatic influences in their effect on feeds, etc., have been the greatest force in the development of the different breed characteristics, and local conditions are more nearly typical of those in the home lands of the Holstein and Ayrshire than of the other breeds. However, all breeds thrive in the Northwest and we need them all to raise the standard of production to the point it should attain. The facilities are here and the dairymen are coming—what we need is more and better cows.
OF all breeds of cattle the world over no breed is so perfect in type, so strong in family characteristics as the Ayrshires found in their native land. Few specimens of any breed are brought down to such perfection of form. The Ayrshire cow as she stands in her native pasture is the highest class dairy cow of Great Britain. She is not only the most perfect in dairy conformation but she is as good as she looks. No breed of cattle possess such great qualities combined with such hardiness of constitution. They are grubbers and workers and are probably capable of turning more grass and rough forage into dairy products than any other breed of dairy cattle, the Kerrys of Ireland possibly excepted. Their long suit is cheese making, rather than butter or quantity of milk, which is owing to the greater amount of casein found in their milk than in the milk of most other breeds. For this reason also the Ayrshire's milk is found preferable to the Jersey's or Guernsey's by people who are unable to take the latter on account of their richness in butter fats. The only complaint and the only reason that has kept the Ayrshire of Scotland from becoming popular in America is they are rather short in the teat. It is unfortunate that many years ago it became the fashion in Scotland in their attempt to breed not only perfect shaped cows but perfect shaped udders, that the breeders in their zeal to produce square level vessels and small perfectly placed teats, carried the shortening of the teat a little too far. This objection in Scotland where the milking is done mostly by women and girls is not so serious as in this country where the milking is done mostly by men who require that the teat should be longer since their hands are larger. The Scotch breeders have, during the last few years, come to acknowledge their mistake and now with an eye to foreign demand they have turned squarely about and are breeding with a view to overcome this objection. It is not at the present time a difficult matter to select animals fairly good in this respect and by taking great pains and insisting on selecting bulls from cows with a good length of teat, the objection that has always been made in this country to the Scotch bred Ayrshire, is in a great measure overcome. There is one other objection by American breeders, which, in fairness, I should not neglect to mention, and that is that they find most of the Scotch cattle heavy hided (bad handlers) compared with the American bred Ayrshire. This point, although true, is not as much of a fault as it seems to be when we come to consider that in the very severe climate of Scotland it is necessary in order to protect the animal from the very severe weather that prevails during nine or ten months of the year. The descendants of the imported Ayrshire brought to this country, after a few generations at least, are found to possess quite as good handling qualities as our own American bred stock. In Scotland nature simply provides them with a coat, as it does the Highland cattle, consistent with the climate they are obliged to withstand. To the man who appreciates the highest standard in symmetry of form and dairy conformation he may look the wide world over and he will not find a breed of cattle so uniform in these respects as the Ayrshires of Scotland. Nowhere has the art and science of breeding for improvement been so carefully worked out as in Ayrshire. It has taken two hundred years or more of the most careful breeding to bring the modern Scotch Ayrshire up to her present exalted state of perfection, and the person who sees nothing in the breed but the dollars and cents to be obtained from such an animal at the pail will only find disappointment in such an investment, as he can buy
good dairy cows among other grades that would be more consistent with his idea of breeding. From a true breeder’s standpoint, however, the Ayrshires as developed in Scotland, stand second to none.

The islands of Alderney, Guernsey and Jersey have produced two breeds of cattle, Guernseys and Jerseys, that have not only made the islands famous as producing the two best families of butter cows in the world, but they have brought hundreds of thousands of dollars to the Island farmers and probably millions of dollars to this country, in the development of our dairy productions. This article would be too limited a space in which to recount their praises to say nothing of their origin, history and wonderful achievements both in the show ring and at the churn. Judging from the questions I am usually asked I beg to submit the following brief sketch as answering some of the most important ones.

The Channel Islands, while off the coast of France and once belonging to that country, now belong to England. They are from one hundred to one hundred and thirty-five miles south of England and from thirteen to seventeen miles from the coast of France. They were formerly the private possessions of William the Conqueror, who in subduing England practically added that country to France. Afterwards when England regained her independence from France the Channel Islands instead of returning to the mother country, always remained loyal to England. Several times the French have attempted to retake these Islands but without success. A well known novel called, “The Battle of the Strong” was based on one of these fruitless attacks. The natives are all of French descent, French is the principal language of the Island, all the law courts are conducted in French. The schools, however, teach both French and English.

Alderney and Guernsey are off that part of France known as Normandy, while Jersey is off the coast of Brittany. There are many conflicting notions as to the origin of these two breeds of cattle, the Islanders have various traditions in regard to shipwrecked vessels and the washing ashore of cattle, etc. My own idea, and I give it as the most reasonable one to advance (though I have never heard it included in the theories set forth by the Islanders) is that since it is such a short distance from the mainland of France to the Islands, it is presumable that they received their cattle from the nearest point to the mainland, probably in fishermen’s boats or it may be possible long before that, when tradition says the islands were once a portion of the mainland. This being true the Guernsey cattle would naturally come from Normandy and the Jersey cattle would naturally come from Brittany. This theory is borne out in the fact that the Guernsey cattle to-day, resemble the native Normandy cattle in many respects, while the Jerseys as closely resemble the native cattle of Brittany. In the Guernsey we find the white shield in the face and occasionally the brindle markings which characterize the Normandy cattle to this day. The color of the Guernsey is more uniform than the Normandy cattle and as a breed they are smaller. The Jersey likewise throws back every now and again to animals with pure Brittany markings, brown or black with a fawn list down the back and a white rim around the muzzle.

For many years there was a mutual exchange, at least of bulls, between Jersey and Guernsey which are seventeen miles apart. The present day Guernsey therefore, seems to be of Normandy descent with a Jersey-Brittany cross, while the Jersey is of Brittany descent with a Guernsey-Normandy cross, or in other words: both the Jersey and Guernsey are the indirect results of crossing the Brittany and the Normandy. The Normandy cattle are about as much larger than the Guernseys as the Guernseys are larger than the Jerseys, and the little Brittany cow is as much smaller than the Jersey as the
ELEANOR
Two-year-old Ayrshire heifer

Courtesy of F. S. Peer
Jersey is smaller than the Guernsey. There came a time over one hundred years ago—some claim it was nearly two hundred years—when Guernsey and Jersey fell out as neighbors; Guernsey, as the story goes, forbade Jersey to send any more cattle to Guernsey, the Guernsey farmers claiming they were too small, that they were only a detriment and they would have no more of them. Jersey retaliated by saying: “We prohibit cattle from the Island of Guernsey landing on our shores, they are coarse, ungainly brutes and we warn you if you bring any more over here they will be killed.” Someone, it is said, was caught at making an exchange, claiming he had brought his cattle from the mainland. Then Jersey and Guernsey both passed laws prohibiting any cattle of any description coming to either Island, no matter where they hailed from. From that day there has never been a live animal landed at either Island except for slaughter, and no animal that has ever been exported from the Island has ever been allowed to return. The only exception to this was that Guernsey, several years ago, permitted one of their Islanders to exhibit his cattle in England, under severe restrictions that they were to be returned, they soon repudiated this ruling as the herd so exhibited in Great Britain and returned to the Island, was the first and only one on the Island to have tuberculosis.

While speaking of tuberculosis I may add that of over one thousand head of Guernseys and Jerseys which I have imported from the Islands, I never had one re-act to the tuberculin tests. Dr. T. A. Geddes, the U. S. V. S Inspector, claims the Islands are absolutely free from this disease.

The Island of Alderney is the first to be sighted enroute from England. It is about four miles long and two miles wide. The cattle on the Island are all Guernseys, they are therefore eligible to be recorded there and in England, also in this country under certain restrictions, the same as if they were born on the Island of Guernsey. There is, therefore, no such thing properly speaking, as an Alderney breed of cattle; it is only correct to say that there are Alderney bred Guernseys. How all the Channel Island cattle that first came to this country came to be called Alderneys is a mystery. There are no steamers running direct to Alderney from the mainland. The only way to reach there is by a little boat that runs between Guernsey and Alderney two or three times a week. Adjoining Guernsey are the Islands of Sark and Yeddo, on both of which are also found Guernsey cattle, both much smaller Islands than Alderney.

The beautiful Island of Guernsey, "The Pearl of the Sea," lies south of Alderney about seventeen miles; it is about seven miles long and three to four miles wide, having about six thousand head of cattle. It is probably the most productive Island in the world, the farms average about five acres and the export trade of the Island amounts to about four hundred dollars per acre for every acre cultivated, to say nothing of what is consumed by the native population which is about forty thousand, and some forty to fifty thousand visitors that come there yearly for an outing, a vacation, or their health. As to the cattle themselves, they are without question, the best all round milk and butter breed that has ever been produced. For a fancy bottled milk trade their product is unsurpassed, being naturally more highly colored than that of any other breed. The whole milk as it comes from the cow has nearly the appearance of being pure cream. This rich color, as some suppose, is not an indication of real cream of butter fat, but is simply the naturally high color of the product as it comes from the cow. For the same reason the butter of the Guernsey cow, is as a rule much more highly colored naturally than that of any other breed. The tallow of the Guernsey when exhibited on the butcher’s block, shows throughout the same high color in excess of all other breeds.
In comparison with the Jerseys they are from one to three sizes larger. Some people seem to think that because they are larger they are correspondingly more robust or stronger in constitution. This is certainly an error. There is no difference between the two breeds in this respect. It is a mistaken notion, though altogether a very common one, that size and constitution are synonymous. If this were true even to a very limited degree, the deer, the gazelle, the antelope and the roebuck would be so lacking in constitution as compared with the moose and the elk that they could only exist under the most favorable climatic conditions whereas the very reverse is the case. It is therefore, only a mistaken notion often repeated, and one that breeders of Guernseys are often heard to make in comparing their favorites to the Jerseys. I mention this in justice to the Jerseys and advise my Guernsey friends to omit this kind but unfair comparison when discussing the merits of the two breeds.

Where as a breed the Guernsey cow fails in comparison with the Ayrshire or the Jersey, is in symmetry of form; they have not had the attention paid to them in this respect that they deserve. The Guernsey Islanders, long years ago, were overtaken with a craze for building glass houses for growing winter vegetables. This paid well, and the more they devoted their attention to glass the less time evidently they gave to their cattle. Their neighbors on Jersey fortunately for their cattle, have never had their minds thus distracted. I am not saying this disparagingly of the Guernseys but to state fairly the facts as they exist. However faulty they may be as a breed in shape of udder, and whatever may be said of the fact that many of them have sloping rumps and run to coarseness, still these facts, glaring as they sometimes are, are only what other breeders have to contend with and correct in their breeds. There is, therefore, no reason in the world to doubt that the Guernsey, had she received the same attention and care as to her selection and breeding, she would have been as high class in this respect today as the other breeds, or at least far beyond what she is today. I predict that when the great dairy merits of the family come to be acknowledged, she will fall into the hands of enough skillful breeders to elevate her to the place she deserves in symmetry and beauty of form and all that goes to distinguish an animal as a perfect specimen of a breed. The best place, however, to do this is on the Island of Guernsey, where the animals are confined to a very limited territory and if the farmers were united they could accomplish more than ever can be obtained by promiscuous breeding outside.

I am pleased to report that never during the twenty-seven times I have visited the Island have I found such an awakening among the farmers on this point as during my last trip. I have attended their annual exhibitions many times but I believe it is fair to say I never saw a better show there than they had in 1909.

The Island of Jersey is about seventeen miles to the south of Guernsey and is as much larger than Guernsey as Guernsey is larger than Alderney. The Island of Jersey is about fourteen miles long and four to seven miles wide, there is about twenty-two thousand acres on the Island under cultivation. The average size farm is eight and a half acres, the number of cattle about twelve thousand, population fifty-five thousand, annual visitors forty to fifty thousand. The Island farmers produce nearly sufficient food to provide for their own people and their guests excepting fresh meat and flour, and export from the twenty thousand acres between three and four million dollars worth of farm and garden products annually. This yield, I believe, has no equal for the same number of acres anywhere in the world. Twenty thousand acres is only a good size western ranch. Guernsey does better per acre but she has something like
seven hundred acres covered with glass houses for growing vegetables, crops and flowers. The Jersey Islanders have but little glass and obtain their immense yield from the naked fields. On an average size farm of eight and a half acres there will be found from seven to twelve head of cattle, two horses, pigs and poultry. The principal farm product is potatoes planted in January and February and dug in April and May.

There has been perfected a system of breeding on the Island under the management and auspices of the Royal Agricultural Society that has produced on the little Island a butter cow that may justly be called a queen. Although her family does not equal the Ayrshire in point of perfect lines, symmetry and carriage, although she does not give as high colored milk or butter as the Guernsey nor as much milk as the Holstein, and although as a family she is smaller in size than any of the dairy breeds, the little Irish Kerry and the native Brittany excepted, still in point of beauty and butter production she shines supreme, not only is she the most beautiful of all dairy cows but as a butter maker, pounds and firmness considered, she leads the list. There may be a cow now and then among other breeds which produces more than any single individual on the Island has done, but as a family, I believe it is safe to say that as butter makers the Jersey has no equal. Their small size has wrongly been held against them, as already shown in what I had to say about size and constitution when discussing the Guernseys. In no herd of cattle are the sexes so strongly contrasted. In the females we find the highest type of the feminine; in male the highest type of masculine. I have always maintained that the highest standard of the race can only be maintained by mating thoroughly feminine females and thoroughly masculine males. The fact that Jersey bulls are somewhat head-strong has been made much to their discredit. I do not mean by this that a man should select a coarse, ugly bull, that is one extreme. A bull that is feminine in disposition always seems to me to be the other extreme.

It has been my pleasure to make three quite large importations of cattle from Holland. While the Holland breeders have not gone in for forced records anything like the American breeders, they have paid decidedly more attention on the lines of breeding for individual merit. Our own breeders have been so carried away with milk and butter yields that they have greatly neglected their cattle along lines of more perfect form as to top lines, shape of udder and quality throughout that go to make the perfect animal in conformation and something to win with in the show ring as well as at the pail. The advantages of buying in Holland is that the Hollanders have kept nearer to and been trying to improve the general conformation of family type. Besides they have no special outlet for their cows, the bulls only going out of the country. On this account good individual animals, high scoring cows in conformation, can be bought there at very reasonable prices.

It is true they do not show as high a percentage of butter fat as American bred Holsteins, and no amount of feeding will increase the proportion of butter fat after they come to this country. But a greater yield of butter fat while it can not be fed into the animal, can be bred into it, by richer and higher feeding of the dams. Their descendants greatly improve in percentage of butter fat until after a generation or two the daughters from imported Holsteins are quite as high in this respect as American bred animals much further removed from imported stock.
THE FARM HOUSE
By L. H. Bailey

[An address delivered before the students in the New York State College of Agriculture, November 15, 1910.]

It is my constant reiteration that country life affairs must be redirected. These affairs and interests are of two general kinds,—those that appertain to the community as a whole and those that connect directly with the farmer's personal life and business. All country life affairs have been inadequate as measured by their possibilities and by the expansion of civilization at large. Institutions and affairs become crystallized and stationary, and it is only by readjustment that we are to grow.

The process of redirection has actively begun in a number of country life institutions, so that we no longer need to point out their deficiencies so much as to aid to shape up the readjustment that is now in progress. That is to say, the forces are beginning to concrete themselves and to work out a solution. This is particularly true with the colleges of agriculture, the country school, the country church, the country highway extension, and the spread of means of communication. In other avenues, the redirecting forces have scarcely yet taken hold.

THE FARM PLAN AND THE HOUSE PLAN

On the side of the individual farmer, the process of redirecting his whole farm scheme is now well under way. By means of direction, aid, and sympathy, a new farm plan will work out, in cases where it is needed, although it will still take considerable time.

I come to you this morning to challenge your attention to the other factor in farming that needs to receive a new kind of thought. I speak of the farm residence.

Farming is a business system and like other business systems it must have a center. The center of the farm business is the residence. When we strike the farm house we strike the very center of rural life. It is just as much a problem to reorganize the farm house as it is to reorganize the farm itself.

Our farm houses were mostly built many years ago. The older ones were adapted to a former kind of country life and to a type of farming that is gradually changing. Many of our older houses are gradually falling down. Many farm houses are all that can be desired; but the larger part of the establishments in New York state must be either thoroughly remodelled or else rebuilt within the next twenty-five to fifty years. It is very important, therefore, that we do not follow old lines of house planning and construction.

Of course, I do not mean that the farmer is to discard his residence until such time as he desires to do so, and certainly not until he feels that his income warrants him to make a change. My point is that as fast as the farm houses are rebuilt or reconstructed, certain new features must be incorporated into them. Neither do I mean that the farmer must build expensively. A cheap house may serve its purpose in the class of construction to which it belongs, and it is as easy to make it convenient as to make it inconvenient.

The farm scheme has been largely traditional, fields being added as the forests have been cleared, and these fields tend to remain year after year. A modern farm management obliterates all unnecessary limits and lines and makes a new plan of the whole property. Similarly, the farm house has been very largely traditional in its plan and construction. A familiar type of house is the long upright-and-wing, with the kitchen at one end and the living rooms at the farther end, and with perhaps the cellar under the upright or parlor, necessitating much travel. Only a part of the house was warmed, so that the living was nearly all concentrated in the kitchen and one or two rooms adjoining it. Any
AN ATTRACTIVE AND WELL PLANNED FARM HOME. RESIDENCE OF T. B. WILSON, HALL, N. Y.

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AN ATTRACTIVE AND WELL PLANNED FARM HOME. RESIDENCE OF T. B. WILSON, HALL, N. Y.

The rambling type lacks the concentration that is needed in middle-class new houses of the present day.

The introduction of water works, the difficulty of securing household help, expense of heating, the removal of the handling of milk from the residence in many cases, and many other changes, have made a new design of farm house quite as essential in many cases as a new plan of the farm itself. I think that town houses need just as much to be redirected as country houses; but I am not speaking of town problems.

There has been a tendency in recent years, when new houses are to be built in the open country, to adopt city models. The house that is narrow and high of necessity in the city, and which serves city conditions very well, may not only be very gawky and unsightly in the open country but may entail much unnecessary labor in running up and down stairs.

WHAT A FARM RESIDENCE SHOULD BE

By way of concrete suggestions, I will throw my statements into classified paragraphs. These suggestions apply to common farm houses, rather than to the estates of country gentlemen.

(a) The farm residence should fit the farm country. Land is cheap; household labor is high-priced and difficult to get. The house should be broad and low rather than narrow and tall. We need a type of farm architecture that seems to grow out of farming conditions. That is, the structure must look like a farm house rather than like a town house.

(b) The house should be very simple in its general plan and construction. This is true of all houses, but particularly of country houses. The farm house should be condensed, whether it is large or small. A general absence of jigsaw trimmings, lathe work, gewgaws, and other mere ornamentation on the outside of the houses would not only eliminate a great deal of expense in original cost and in upkeep but would also relieve the structure of much that is commonplace and of no account. The beauty of a building lies not in its external
ornamentation, but in its proportions, its fitness to conditions, and in the materials of which it is constructed. Nothing presents a sadder appearance than a very much ornamented house when it once begins to become shabby and to go to pieces; and all merely ornamental work is short-lived, and requires constant attention to repairs and painting. A neglected simple house presents a very much better appearance than a neglected ornate house.

(c) The ordinary farm house should have a very simple roof scheme, with as few valleys and peaks and flashings as possible. The beauty of the house should lie in its dignified and simple sky lines rather than in its complex and broken features.

(d) The house should be planned to save steps to the utmost. It must be remembered that a residence is a working place. The kitchen, dining room, woodshed and cellar should all be within easy reach of one another. So far as possible, the rooms that are daily used together or between which there is very much travel, particularly on the part of the housewife, should be on the same floor with no steps up and down. We have not appreciated the fact that the woman's steps cost time and strength and, therefore, cost money. We should so plan a house that the woman may be able to save much of her energy for other activities than merely those of housekeeping.

(e) The house should be so planned and made that it can be easily cleaned. This means absence of all elaborate spindle work, filigree, and also of heavy and upholstered hangings in the furnishings, and of useless corners and of eccentricities. Now that we are appreciating the relation of dust to health and disease, we must take a new attitude toward the construction and the furnishing of residences.

(f) The house should be constructed or remodelled with the idea of applying power to some of the household work, as to the laundry, pumping, eventually to the cleaning of the rooms and to other labor. We have been applying power to the work of the farm and the barn, but we have not adapted it to any great extent to the work of the house itself.

(g) Every modern house should have water running into it and out of it. Within twenty-five years every good farm residence, and even many tenant houses, will be as well provided with water supply facilities as are city houses. In fact, since the farmer can secure his water without paying water-tax or being subject to water boards, he ought to be able to control the situation much as he will.

(h) The ordinary farm house must be planned in such a way that the members of the family can do the housework. They do not depend on servants. I am sure that in many cases it is possible to reduce the work of keeping house by at least one-quarter or even one-third if the house plan is carefully studied with this idea in mind.

(i) You all know that most of the unexpected visitors to a farm house go to the back door or side door. This is because the woman and the family are at work in the rear of the house. There may be no servant to "tend" the door. This being the case, it is necessary that the secondary or back door entrance be much more important and convenient than it ordinarily is in a farm house. It means that the back of the house is to be as highly developed in some respects as the front. Perhaps it will mean in the end that there really is no "back" to the house at all, and that the establishment shall "face" all ways and have no unkept back yard.

(j) The house must be provided with ample storage space. Groceries are often bought in quantity. The winter's supplies are "put down" in the cellar. In many places this storage place should provide room to hold vegetables, fruit, and other supplies, that are to be sold. Ordinarily, the larger part of this storage is in the cellar or the attic. This necessitates many steps. It is a question whether a good deal of the material would not better be stored on the first floor.
Another View of Mr. Wilson's Home, Giving Better View of the Comfortable Veranda on the Side of the House.

with a place specially designed for it, like an enlarged closet.

(k) The first floor and the cellar are the centers of the family activity. The members of the family spend much of their time out of doors. This means that the first floor should not be approached by high steps from the outside, and also that wash-rooms and other service rooms should be on this floor and easy of access, and preferably near the farm-side entrance. The men from the barn or fields should not be obliged to run through the house to reach their conveniences.

(l) When additions are placed on an old house, care should be taken to have them match the style of the original. It is common to find old box-corniced houses with turning-lathe chicken-legged porches added to them; these additions always look out of place and sometimes are ludicrous. If left to the taste or whim of the ordinary carpenter, additions to residences are not likely to present a suitable appearance.

A Dozen Problems

The above categories will suggest problems for the student to work on, but I will mention a few specific things for those of you who are interested in house planning to take directly into your class-work. Of course I do not assume that all these things are to be incorporated into one house (although it is perfectly feasible to do so), but while you are here you should work out one or two of them at least, for application at home, when you can afford it.

(1) Plan a water works system with a supply coming from an elevated tank in the barn or in the attic; from a pneumatic tank in the cellar; from a pneumatic cistern; from a creek or well or a spring at an elevation above the house; or from a hydraulic ram.

(2) Plan a compact room arrangement to allow a woman with two or three children to do her work without servants, and also to have some time for reading and for social activity.
(3) Consider how a hired man may occupy a room which has a separate entrance from the remainder of the family and yet which may be under family control.

(4) Plan the addition of out-door sleeping facilities. Add a fireplace to an old farm house.

(5) Plan a house with an accessible and attractive back door or work door entrance.

(6) Plan a lighting system either by acetylene gas, electric light, or other means that are now available. Extend this system to the barns, if practicable. Also devise a way to heat the house.

(7) Plan a plain work room or retiring room for the women of the family, particularly for the wife and mother. This should be a retreat room that is free from the cares and noise of the remainder of the house, containing perhaps a few books and other means of recreation.

(8) Provide an office that shall be the business nucleus of the farm scheme. The office should be of easy access on the first floor of the house rather than in the attic or in the barn. It would be easy to add such an office to almost any farm house. It should have an outside entrance as well as connection with the living rooms.

(9) Figure out a system of storage rooms that will take care of the family supplies, and also hold such products as need to be sold or handled from the residence, assuming that the family is six persons and the place a general farm of 100 acres.

(10) Plan the simplest and most compact arrangement of rooms properly to accommodate a family of six, on a 150-acre farm.

(11) Devise a system of light power that can be applied to household work, and indicate the kinds of work that may be effected by it. The plan may contemplate a water-power outfit, windmill, gas or hot-air engine, or an installation through electric wires.

(12) Plan a garden or yard that shall be a real supplement to the house. I do not now have in mind so much the raising of vegetables and fruits for the household supply as the providing of pleasant out-door spaces for reading, sitting, dining and the like. Every opportunity should be seized to get the farmer and his family out of doors, as contact with nature in the hours of leisure will add much to the resourcefulness of his life.

STANDARDIZED HOUSES

We very much need standardized plans for farm dwellings. Such plans would indicate the nature of the problem, how all the parts of the residence are related to each other and to the needs of the family, and to the needs of the farm.

We are now working out standard schemes of farm management. It is not expected that any plan will be literally followed by any particular farmer, but it is possible to study the principles that underlie a farm organization that shall be economically most feasible. Similarly we ought to have such a knowledge of the household necessities as will give us some rather definite working statements on the best general arrangement of rooms, the floor space per person, the size of the house in relation to the size of the farm, how large one kind of room may be with reference to another kind, the proportionate outlay that may be devoted to house and barn and to the farm. I do not have in mind the ready-made plans that we see in the public prints, but rather a set of working principles. A person ought to be able to apply these principles at the same time that he expresses his personal tastes and varies the plan in its details.

Such standardized plans are not likely to be worked out by practicing architects, because the fees in farm house work are so small as not to make the business profitable. It then devolves on society to make such studies, and to develop the work. That is, the government must do it through some agency. At present, the only agency that seems to be available is the system of colleges of agriculture in the different states. If it is true that the character of the
farm house is to have great influence in the redirecting of country life, then it is very important that every college standing for such redirection have a first-class Department of Rural Architecture.

OBJECT LESSONS ON THE UNIVERSITY LANDS

If all these points of view are well considered, then it follows that this College of Agriculture should begin, as soon as it can, to work some of them into actual farm houses. We have recently purchased a number of farms. They contain residences of the old kind. Some of them may be rebuilt. We shall need new buildings in other places. We shall, of course, need more buildings than a farmer would need because of the different kind of work that we are doing. We could use the extra rooms in many of the buildings for assistants' and students' quarters.

I have long wished that we might begin to erect different kinds of farm houses on our various farms to stand as suggestions and examples, ranging from the lowest price of farm houses to those of the larger size. Every house should be a standard in its class, with good sanitary conditions, water supplies, and a useful garden attached to it. Here is an opportunity for the expenditure of small sums of money that will be sure to give most excellent results. A building stands not a day, but year in and year out; it is a silent teacher, and its influence is greater than any of us are aware.

THE MENTAL PICTURE

As I said at the beginning, I do not expect all this to come quickly, or before its time. I want to challenge your attention, to get you thinking along uncustomary lines, and to set in your minds a new picture of home and efficiency.

THE BASIS OF SELECTION FOR DAIRY CATTLE

By W. R. Dunlop, '05

Up to within a few years we have been obliged to depend largely on the show yard as a guide for the improvement of our dairy cattle, but since the advent of records of production, we have another and very valuable index for selection. The question comes to us all, "Which is better?", and we reason, "Why not both?" In either case there are redeeming features, and either may be misleading.

The show ring furnishes us with the perpetuity of type. Here are assembled choice specimens of the breeds, pitted against each other for preference. Qualified persons interpret the standards of the breeds and we see in the winners the approved type. Here the perfect udder is considered, and vigor and form as we understand they should be, are given their due weight. The general symmetry of parts that are excellent in themselves makes the ideal animal.

On the other hand, we know of productive power only through records. These are of two classes: those for short time, and those for long time. We cannot give too much consideration to seven-day records. They are apt to be, and often are, very misleading. The really valuable records are yearly records and the business dairyman of today insists on all-the-year-around cows. So if we are breeding dairy cows, do we not miss our purpose if dairy production is not the one basis for selection? We must produce what the intelligent public wants if we are to make any progress as breeders.

Theoretically, these two measures of quality are harmonious. In actual experience we find wide discrepancies. How much of dairy function is due to
GUERNSEY COW, "HAVES ROSA"


Courtesy of F. S. Peer.
form of udder? What per cent of our high record cows have perfect or even passable udders? I cannot answer that further than to say that we may go too far with this record selection in breeding and ignore type too much. We are reasonably sure that a deficient fore udder means deficient production in those quarters, the difference sometimes being almost beyond belief. We also believe that like begets like. Is it intelligent to go record crazy and forget that first of all we have a breed to perpetuate in its high form? What may be said of udder symmetry can be applied to other parts as well. One cow, I recall, held for years a first place in a certain class in her breed’s records of production. She had a short drooping rump that was almost a deformity. Had a casual observer, not knowing the facts, seen this cow, she would have been a subject for slighting remarks. Yet her record sent one of her sons into a herd of very high-class cattle. Was this dairy wisdom?

But, though there be obvious discrepancies, there is a general relationship between dairy type (which does not interfere with breed type) and dairy production. How closely we are able to recognize this type is a question. It would be discouraging if after all these years of dairy farming we had not approached the producing type, and probably our comprehension of it is not far off. The cow that wins today has to come pretty close to the business farmer’s cow. We are drifting away from those fads that have kept down progress and we are looking pretty generally to our goal: vigor first; type and production following. We are demanding business features and putting fads in the van. Useless features, among which are color of Short-horns, Ayrshires and Jerseys, are taking their place along with the black nose fright of the Guernseys. Instead of lawn ornaments, we are now thinking of how much refinement we want in the more robust animal that business favors.

There is one thing that is now being brought into use in the selling of cattle that is sure to become of even greater value than it now seems. Some breed associations demand it in connection with their records. That is the photograph. Next to actual inspection, this affords the best description of an animal. It is way ahead of a man-made score, which can never be made twice alike, even by the same man. This, coupled with a record, enables a prospective buyer to study the type and can do a vast amount of good in harmonizing records of performance and type.

One should always consider conditions under which records are made; there are records apparently creditable made by expert handlers that are not all they might seem. It is like a race horse or an athletic team, where often ninety per cent of the achievements are due to the trainer. Phenomenal records are good advertisements. What is better, however, is a plenty of good substantial records and the repeaters—those who do the trick over and over, are the kind of cows that we are trying to produce.

As breeders we must maintain a certain code of honor (which has not been lived up to completely). The buyer is usually a novice and depends on us for fair treatment. Is it fair to sell for a large price a bull from a beautiful cow that, although she can show with the best, may not be able to make two hundred pounds of butter in a year? Is it fair to sell a bull from a large record cow that is decidedly malformed? We must look beyond the dollars and cents and try to help boost the breed. In it there is a slight satisfaction that is variable according as we use our conscience in the matter.
GUERNSEY COW "DOLLY DIMPLE"

Owned and bred by F. L. Ames, North Easton, Mass. One year's record, 18,458.8 lbs. milk, 906.89 lbs. butter fat.

Courtesy of American Guernsey Cattle Club
HOLSTEIN BULL "KING OF THE PONTIACS"
Owned by Stevens Bros., Liverpool, N. Y.
Photo by B. Weitzer, Sr.

HOLSTEIN COW "COLANATHA 4TH'S JOHANNA"
Owned and bred by W. J. Gillette, Rosindale, Wis. One year's record, 27432.5 lbs. milk, 998.26 lbs. butter fat.
COMMON FAULTS IN BUTTER MAKING

By E. S. Guthrie

Instructor and Investigator, Department of Dairy Industry, Cornell University

In this article the writer will confine his attention to butter made on the farm.

The following score card which is used by the butter dealers of our large cities and by judges at butter exhibitions, shows the relative importance of the different factors. Flavor 45 per cent, body 25 per cent, color 15 per cent, salt 10 per cent, and package 5 per cent. Now, what are the requirements of our markets and what are the common faults?

**FLAVOR.** The butter should have a pleasant, clean, creamy flavor. Some of the objectionable flavors are rancid, strong, old, cowy, barny, feedy, dirty, etc. Some of these flavors may be absorbed taints. However, most of them are of bacterial origin. Even the "cowy" flavor has been produced experimentally by bacteria. It is apparent that every butter maker must be a student of dairy bacteriology. If he has difficulty, he should study the probable sources of the bacterial contamination which may be: First, in the cleaning of the utensils. Second, in the milking process. Third, in the ripening or souring process. Fourth, in the draining of the buttermilk, which is a first-class bacterial food, from the butter. And fifth, in the wash water. If it is thought that the water is the source of trouble, it is well to boil it for a few churnings and note if there is any difference in the flavor. A great deal more might be said regarding flavor, the most important factor in butter making.

**BODY.** The butter should have a nice, waxy appearance. It should not be soft and greasy, nor on the other hand, hard and dry, for butter is used mostly for spreading on bread. In order to get a waxy body the temperature must be watched carefully. About 58° or 60° F. in the hand churn is right when other conditions are proper. It is noticeable that on many farms the cream is too thin. It should contain from 30 to 40 per cent butter fat. Well ripened cream with the desired fat content will churn readily to a nice clustered popcorn condition at the above temperatures and not be greasy. From this granular, popcorn condition which cannot be obtained with thin cream at high temperatures, the buttermilk can be drawn off easily. The importance of leaving the smallest possible amount of buttermilk in the butter has been noted. Now, wash the butter with water at from 54° to 58°F. This washing will take away more buttermilk. If the temperature is too low, the butter will be too hard to work and consequently it is likely to be tallowy. Also the salt is more readily distributed in the waxy butter. Sometimes it is necessary to use a lower washing temperature because of high room temperatures. Such temperatures should be avoided as much as possible.

**COLOR.** The color must be uniform and must suit the market in shade. It must not be streaked and mottled. The cream should always be strained into the churn to prevent lumps of curd from being incorporated in the butter. If the salt is properly distributed by sufficient working, no difficulty should be experienced with mottled butter. If the butter is too cold when worked, the working process is likely not to be completed, consequently the salt and casein will not be properly distributed and mottles will result. No consumer wants mottled butter.

**SALT.** The salt must be dissolved and it must suit the trade. Gritty or undissolved salt is never permitted in the highest scoring butter yet there is a great deal of it made in New York. If difficulty is experienced in dis-
solving the salt, partially dissolve it by placing it in a pail and just cover it with water of about 60°. Let it stand at least an hour. This will usually dissolve good butter salt sufficiently for it to be completely dissolved in the butter inside of 30 minutes after it has been worked.

**Package.** The package should be neat and suit the market in style and size.

From observations made at the New York Educational Scoring Contests and at the New York State Fair, the writer believes that, excepting flavor which is usually difficult to control, that the most common faults in butter made on the farm that can be easily controlled are:

1. The use of too high churning temperatures, thus making greasy butter and incorporating too much buttermilk.
2. The use of too low washing temperature causing the butter to be too hard for proper working thus accounting largely for the improper distribution and dissolving of salt and the presence of mottles.

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**HOLSTEIN COW BELLE KORNDYKE AT 19 YEARS OF AGE.**

A. R. O. records 25.77 lbs. butter and 509.8 lbs. milk in seven days. The foundation cow of the Korndyke family of Holstein cattle. Owned by Henry Stevens & Son, Lacona, N. Y.
THE class in advanced stock judging which consisted of about twenty students began work last spring around April first. The class met once a week, on Saturday, a trip usually being taken to a herd in the vicinity of Ithaca, or by train to herds in other parts of the state. Among the herds and breeders visited in the state were: Guernseys, G. B. Tallman, Fayetteville; Otto W. Post, Ensenore, and Alfred G. Lewis, Geneva; Jerseys, E. W. Mosher, Aurora, Glenwood Farms, Ensenore, and Mekeel Brothers, Jacksonville; Ayrshires, W. P. Schanck, Avon, and F. S. Peer, Ithaca; Holsteins, E. A. Powell, Syracuse, Stevens Brothers Co., Liverpool, H. A. Moyer, Syracuse, E. H. Marshall, Ithaca.

The breeders have freely offered their aid in every way and the team owes much of its success to them. In order to turn out a successful team, it is very necessary that the College have this cooperation from the breeders. The animals of the College herd are pretty thoroughly gone over in the elementary judging of Course 1, and when the competition for the team begins, new animals to work with must be found. Through the kindness of various breeders, the students have been able to study some of the best animals of the breeds and the different types within the
breeds. These men being themselves expert judges, have given the students invaluable training through the points which they have brought out, the suggestions which they have offered, and the criticism they have made of the students' judgment. We were always most kindly received and cared for and the students will remember the visits to their herds with great pleasure. In considering the good gotten from such a competition as the students are engaged in, these trips cannot be overestimated. It brings one in touch with the leading men among the breeders who are always ready to give the students much valuable information as to how they have developed their herds, etc.—knowledge that they have spent a lifetime in securing.

At the close of the spring term, nine men were chosen from the class to compete this fall for the team. These men were F. E. Rogers, B. Weitzer, S. G. Judd, A. L. Thompson, W. H. Holloway, C. E. Mack, L. H. Schwartz, I. S. Brown, and F. W. Bell. Just before college opened this fall, these men all accepted and spent two days very profitably. Judging commenced again as soon as college opened, October second.

Tuesday, October 18th, Professor Wing picked the six men who stood highest, Weitzer, Holloway, Thompson, Rogers, Judd and Bell, and started on a two days' trip for the final selection of the team. The men first went to Preble, New York, where they visited Mr. Nyes' herd and later in the day, Mr. Knapp's. They went to Syracuse that evening. The next morning they went to Mr. Tallman's place at Fayetteville, and returning to Syracuse, visited Mr. Powell's farm. The final cut was now made and the team composed of F. E. Rogers, Sp., S. G. Judd, '11, and F. W. Bell, '11, left for Chicago, arriving there the next forenoon. In the afternoon Professor Wing and the team went to one of the World's Championship series of baseball games.

The next morning, Friday, October 21st, at eight o'clock, we reported at the Coliseum, where the National Dairy Show was held. Seven teams of three men each were gathered there to engage in an intercollegiate contest in judging dairy cattle. The following institutions were represented: New York State College of Agriculture, Cornell University, Ithaca, New York; Ohio State University, Columbus, Ohio; University of Nebraska, Lincoln, Nebraska; Iowa State College, Ames, Iowa; Kentucky State University, Lexington, Kentucky; New Hampshire State College, Durham, New Hampshire. The University of Minnesota, St. Anthony Park, Minnesota, was entered but because one of its members unwittingly violated one of the rules of the contest by going to the Coliseum the previous day, the team was not allowed to compete, but the two remaining members competed for individual honors.

Mr. B. H. Rawl, Chief of the Dairy Division of the United States Department of Agriculture, who has charge of the student competition, read the rules to us. These rules are very strict and are lived up to to the letter, so that there is absolutely no chance of unfairness or crookedness. The men were divided into squads of about six men each, one of Chief Rawl's assistants being put in charge of each squad, who remained constantly with the men to see that the rules were not violated. No two men of the same team were in the same squad, so there could be no chance of team work. A ring of four bulls and a ring of four cows of each breed were judged with the exception of Ayrshires, of which only cows were brought out.

Guernseys were the first breed taken into the ring and two of the squads began work, one on the bulls and the other on the cows. We were given two small cards, one for notes and the other for placings. The animals were
first led around a couple of minutes and then the students were allowed to examine them more closely. Fifteen minutes was allowed to judge a ring and then the students changed rings, those having judged bulls taking the ring of cows and those having judged the cows taking the ring of bulls. The squads are again given fifteen minutes in which to place the second ring. At the end of this time, these two squads left the arena and were given fifteen minutes for writing the reasons for the placing of each ring. Meanwhile the other two squads were judging the animals. After all four squads have judged the animals, the committee of official judges upon whose judgment the students were rated, placed the animals and took such notes upon them as they might need in considering the reasons of the students. This committee of judges was composed of Charles L. Hill and Frank H. Scribner, both of Wisconsin, and Professor W. J. Fraser of the University of Illinois. The contest was not finished until about five o'clock in the afternoon. A group picture of the contestants was then taken, and in the meanwhile the fellows got acquainted and discussed the day's work.

Throughout the contest the spirit of fair play was apparent and the students showed much commendable enthusiasm in their relationship to the affair. At no time since these annual contests began has anyone questioned the fairness with which they have been conducted and there have been no unsavory rumors concerning anyone identified with them. This is very gratifying as a guarantee of the future development of these contests. Much credit for the high character of these contests is due to Superintendent Rawl and his staff of assistants. These contests have been most efficiently and admirably conducted.

Contests of this sort create student pride and enthusiasm and result in better work in general on the part of the college man. The various trips that are taken to the breeders' herds, and the final contests at the National, bring the college, the students, and the instructors into sympathetic touch with the stock breeding constituency. An important phase of educational work is thus brought before many men who would not otherwise note it and their interest and assistance in building up college departments that are giving such training is thereby secured. Such educational work impresses the practical man and he sees the worth of the college and brings his influence to bear in its behalf.

The next morning we returned to the Coliseum and spent some time looking the Show over. There were about five hundred head of cattle. Where we had disagreed on the animals we were anxious to look them over again and get Professor Wing's opinion on them. After looking the cattle show over thoroughly, we turned our attention to the exhibit of dairy machinery and appliances, which was very complete. We spent the afternoon visiting Swift's packing house and the stockyards. We also spent some time in the Horse Sales Stables and the Dexter Park Pavilion, where the International Live Stock Show is held.

Eight o'clock Saturday evening found the competing teams with their professors again gathered together at the Coliseum to hear the results of the contest. The first breed announced was the Ayrshires, which was won by Missouri, New York being a very close second. Judd of Cornell made the individual high score in Ayrshires.

The next breed announced was Guernseys, and the silver trophy cup came to New York. Bell of Cornell received the high individual score of this breed.

Holsteins came next, the cup going to Ohio.

The Jersey cup now remained to be awarded and everyone was mighty anxious to see which team would get it, for the leading teams appeared to be rather close in the race for the sweepstakes trophies. After what seemed considerable suspense, to the teams at least, this was awarded to
Cornell, this being the second year in succession that New York has carried it home. Rogers of Cornell was the high man in Jerseys. We now began to hope that the two sweepstakes trophies might be added to our list and our hopes were soon realized. These are two magnificent silver cups, one being offered by the National Dairy Show and the other by Hoard's Dairyman. So of the five silver cups offered, the Cornell team brought back the two breed cups, Guernseys and Jerseys, and the two sweepstakes cups, the other breed cup, the Holstein, being won by Ohio State University. A detailed report of the contest follows:

**AYRSHIRES**

- High team: University of Missouri with 534.99 points out of a possible 600.
- Second team: New York State College of Agriculture with 514.99 points.
- Third team: University of Nebraska with 495.33 points.
- High man: S. G. Judd, New York State College of Agriculture, 183.33 points out of a possible 200.
- Second man: H. P. Mayhew, Iowa State College, 181.66 points.
- Third man: A tie. R. C. Emerson, University of Minnesota, 180 points. A. C. Page, University of Missouri, 180 points.

No trophy was offered for competition in judging this breed.

**GUERNSEYS**

- High team: New York State College of Agriculture, 952.65 points out of a possible 1,200. This team won the silver trophy cup offered by the American Guernsey Cattle Club for the team doing the best work in judging Guernseys. This cup, which represents a Guernsey milk pail in design, must be won three years in succession by a college to become its permanent property.
- Second team: University of Missouri with 902.98 points.
- Third team: University of Nebraska, 884.64 points.
- High man: T. B. McNatt, University of Missouri, with 331.66 points out of a possible 400.
- Second man: A. C. Page, University of Missouri, with 328.83 points.
- Third man: T. B. McNatt, University of Missouri, with 321.66 points.

The total scores made by the first three teams and three highest men, on all breeds, are as follows:

**TOTAL RATINGS**

- High team: New York State College of Agriculture, 3,209.92 points out of 4,200. This record gave this college the silver sweepstakes trophy offered by the National Dairy Show Association, and also the sweepstakes trophy offered by "Hoard's Dairyman" for the best general work.
- Second team: University of Missouri, 3,182.69 points.
- Third team: University of Nebraska, 3,109.94 points.

The total scores made by the first three teams and three highest men, on all breeds, are as follows:

- High team: New York State College of Agriculture, 3,209.92 points out of 4,200. This record gave this college the silver sweepstakes trophy offered by the National Dairy Show Association, and also the sweepstakes trophy offered by "Hoard's Dairyman" for the best general work.
- Second team: University of Missouri, 3,182.69 points.
- Third team: University of Nebraska, 3,109.94 points.

- High man: Francis E. Rogers, New York State College of Agriculture, with 331.66 points out of a possible 400. Mr. Rogers was a special student in the college he was not eligible for the scholarship of $400 offered by the American Jersey Cattle Club to the man doing the best work in judging Jerseys.
- Second man: Ivan McKillip, University of Nebraska, 328.83 points. The $400 scholarship was awarded to Mr. McKillip.
- Third man: T. B. McNatt, University of Missouri, with 306.66 points.

- High man: S. G. Judd, New York State College of Agriculture, with 923.32 points out of 1,200. This team won a large silver trophy cup offered by the Holstein-Friesian Association of America for the best work of a team in judging Holstein-Friesians. This to be retained permanently must also be won three years in succession.
- Second team: Iowa State College with 926.64 points.
- Third team: New York State College of Agriculture with 923.30 points.
- High man: T. B. McNatt, University of Missouri, with 358.33 points out of a possible 400. Mr. McNatt won the $400 scholarship offered by the Holstein-Friesian Association of America for doing the best work in judging this breed.
- Second man: H. P. Mayhew, Iowa State College, with 351.66 points.
- Third man: S. G. Judd, New York State College of Agriculture, with 340 points.

- High team: New York State College of Agriculture, 3,209.92 points out of 4,200. This record gave this college the silver sweepstakes trophy offered by the National Dairy Show Association, and also the sweepstakes trophy offered by "Hoard's Dairyman" for the best general work.
- Second team: University of Missouri, 3,182.69 points.
- Third team: University of Nebraska, 3,109.94 points.

- High man: T. B. McNatt, University of Missouri, with 1,151.08 points out of a possible 1,400. Mr. McNatt also won the special prize of $50 offered by the National Dairy Show Association.
- Second man: S. G. Judd, New York State College of Agriculture, 1,139.98 points.
Third man: H. P. Mayhew, Iowa State College, 1,128.31 points.
Fourth man: Ivan McKillip, University of Nebraska, 1,117.31 points.

TEAMS PARTICIPATING IN THE CONTEST

Points
New York State College of Agriculture 3290.92
University of Missouri 3183.94
Nebraska Agricultural College 3109.94
Iowa State College 3109.25
Ohio State University 2923.26
College of Agriculture, Kentucky State University 2912.26
New Hampshire Agricultural College 2830.94

More men should enter the competition for the team, for the training received in such work is excellent. The powers of quick and accurate observation and judgment, and retentive capacity of the mind are wonderfully developed. A person must be able to see wherein the many parts of each animal are good or bad and hold these in his head to compare with each of the other animals in the ring. These are intellectual efforts of splendid character. The team must bring the Jersey cup back again next year. We have won it twice in succession and a victory next year will bring it to the college permanently.

The great need that the college and students feel in the preparation for this contest is for more actual show ring practice. This can be secured only through the cooperation of the fairs. A very commendable example was set this year by the Chemung County Fair, and let it be hoped that this will be followed by others the coming fall. The very best of training could be secured at the State Fair if arrangements could be made to allow the students to judge some of the rings before the official judge passed on the animals, and the students could then be rated upon their placings. Of course, this could not be done with all the rings, as it would necessitate too much delay, but if the rings of aged bulls and of aged cows, of the four leading dairy breeds were gone over by the students, the very best of preparation would be given them, and a very good index as to their ability would be secured by their instructor. Last fall this scheme was tried at the Brockton Fair by some of the New England Colleges and proved highly successful.

The success of this and previous Cornell teams must in a large measure be attributed to the excellent training that they have received from Professor Wing. And it is the unanimous expression of the men composing the team that their work and associations with him have been the pleasantest of their college course. We will always look back upon the time spent in this competition, and particularly upon the trip to Chicago when we became so much more closely connected with him than one can in the class room, as on one of the most pleasant and profitable times we have ever spent. Our only regret is that we cannot go with him next year. Let me say to the men who do go that they will feel a hundred fold repaid for their efforts whether the team be first or last.

THE FOURTH ANNUAL FRUIT EXHIBIT

By D. G. Woolf, '12

Perhaps Professor Wilson’s visit to the West gave our fruit show a national aspect, perhaps more people in New York State are engaging in horticultural work, perhaps the fact that the exhibit was to be specialized with especial reference to pears and apples attracted the growers of these important fruits. At any rate, the show far eclipsed previous ones and earned the honor of being the finest, from the educational standpoint, of its kind ever held by an agricultural college in this country. For days before, fruit from the east and west, north and south, fruit large and small of all varieties and sizes, with all kinds of variations and special
features, but all in good condition, poured in upon the various committees in charge of the show. These had to be unpacked and graded, arranged on the tables and labeled; the Cornell colors had to be draped around the room and halls, and general preparations for the conduct of the show had to be made. Such an abundance of fruit was there that during the three days of the show it continued to come in, and much of it had to be left out because of lack of time and space.

The exhibit lasted from November third to November fifth and during that time about a thousand visitors viewed the display. On the evening of November third, the regular monthly assembly was held, and during the entire evening the exhibit room and halls were thronged with interested spectators. Due to Professor Wilson's knowledge of how to obtain the best effect in arranging fruit, the visitors were not only instructed but also enjoyed an artistic sight for there is no doubt that the room presented a striking appearance.

The apples were, of course, the main part of the show. From the large brilliant Ben Davis down to the small, unattractive russet, the specimens there made up a collection which probably was never duplicated in any one exhibit. Arrayed against our fruit from New York, Pennsylvania, New Hampshire and the other states of the East, were the apples from the West, Hood River Valley, California, Colorado and other states. Student judges, under the guidance of Professor J. P. Stewart of the Department of Horticulture of Pennsylvania State College, considered long and carefully the relative merits of the eastern and western varieties, but their report was needed only to strengthen, not to inculcate the belief in the mind of each visitor that we can accept the challenge of our brethren of the Far West, and not only equal them but outstrip them in many particulars.

But we have much to learn and they can teach us one very important fact. It is based on a simple economical truth and yet the lesson is one which
we have got to appreciate and assimilate before we can prevent western fruit competing with us in our own market. The truth is this: With all the scientific knowledge and higher agriculture which the present day offers, with the best and most productive soil in the country, with a natural love of nature and her sphere, we cannot be practically successful unless we incorporate into our farm work a simple business foresight—the ability to put up our produce in the most attractive and saleable form. The poultryman finds that he must learn this; the truck gardener needs it, and above all, it is vital to the success of a horticulturist. So from the neatly wrapped and boxed apples from the Hood River Valley, every New York fruit grower can learn a valuable lesson, one which he must learn now by example or later by costly experience.

The lesson taught by the exhibit is two-fold; first, right here in New York State we have advantages equal to any other fruit growing section; and second, the eastern growers can learn a lesson from the western growers, which is this: Secure better packing methods; first, by grading or sizing all fruit for either box or barrel; second, by packing fancy varieties in boxes; third, by more careful handling of all fruit to avoid bruising.

Vieing with the apples in importance were the pears. Over sixty varieties were to be seen, fifty-one of which were in one collection, sent by Messrs. Ellwanger and Barry, of Rochester, New York. Another valuable collection, commercially, was sent by Mr. D. K. Bell, also of Rochester. This was a unique exhibit, one not often to be seen. Each variety was at its very best and a novice had a good chance to get acquainted with the various specimens. A few plates of grapes and persimmons lent additional color to the exhibit.

Besides the fruit itself, there were several important "side-shows." The exhibit by the Department of Plant
Pathology was especially instructive in showing the form and control of fruit diseases. The application of Lime Sulphur, which was such a valuable part of last year's exhibit, was extended to the application of Lime Sulphur and Arsenate of Lead. The injury accomplished by Bordeaux was well illustrated. The exhibit of the Department of Entomology, showing the work of fruit tree insects, was of equal importance. To appeal to the housewife and the epicure was the exhibit of the Department of Home Economics, showing the wonderful transformation that can be made in fruit to render them in a suitable shape for the table.

The Fruit Show has a message to every student in the college, every farmer in the State. The message is all-important to both. To the young man contemplating a launch into horticultural pursuits, the message is one of warning. It is not to underestimate the farming in the other half of our country, but rather to sober down to its right shade the glowing picture of the "Golden West," which is imprinted on the minds of so many prospective farmers. It is to show the advantages of fruit growing right here in our own state. To the farmer, already settled in the East, who leans on his hoe in the hot sun and thinks with dissatisfaction of his life here in the East, and as he watches the express train fly westward, wishes that he too might journey to the Land of Fortune, it offers a message of hope and encouragement. It shows how, by scientific knowledge and business ability, he can compete on the same ground with his western friends of such greater reputation.

To the fruit grower who watches the ever present diseases and insects demolish his crop, the exhibit offers intelligent help. The manual labor of fighting these pests can be greatly lightened by a little knowledge of their habits and their vulnerable points. This knowledge is free. The show helped to inform him of this fact.

The Fourth Annual Exhibit is but a memory. Its existence was short and of comparatively small repute, but we wonder if we cannot feel assured that the constituency gained by it in the interest of more profitable horticulture will not make itself felt over a wide area, and if a step, no matter how small, has not been taken in the great stride toward a wiser, saner agriculture.
This issue is mainly devoted to the discussion of subjects related to dairying. The articles deal with cooperation among dairymen, selection of breeding animals, manufacturing dairy products, localities adapted to dairying; in general a discussion of the dairy industry and its needs.

We have intentionally avoided breed controversy because we consider no breed to be best under all conditions but that each breed has distinct advantages for certain definite purposes. It has seemed better to publish one general discussion of the four leading breeds of dairy cattle and to present throughout the issue pictures of some of the best individuals of these four breeds.

The dairy industry is capable of enormous development and we are confident that the contributors to this issue will offer many suggestions which if followed out will bring advancement.

Before this issue appears the Short Course students will be with us. To these students the Cornell Countryman extends its most cordial welcome.

Different from our freshman classes these students enter in the midst of our term's work. Coming at this time their position in our college organization is unique. They bring with them great enthusiasm and the whole college feels the difference in atmosphere. We urge the Short Course students to keep their enthusiasm within proper bounds and to direct it towards their own improvement and thus, as a logical result, for the good of the institution.

Further—although here for but a short time, you are registered as special students in Cornell University. This privilege carries with it responsibilities which we hope you are willing to assume. The first of these is to do your class work well. Then be a good fellow and become acquainted with every other "Shorthorn" here, and with as many long course students and members of the faculty as possible. Attend the monthly Assemblies, the meetings of the Agricultural Association and those of your own Departmental club. The College of Agriculture holds an annual banquet which the Short Course students have always well attended; your support is likewise expected this year. We feel, also, that the Cornell Countryman is worthy of the support of every student and expect you to subscribe. Above all, we expect you to be careful of the appearance of the college buildings and property, the use of which is entrusted to you for a time.
If the proper spirit of co-operation and good-fellowship exists between the long and the short course students, as it will exist if each does its part, both will be the gainers for the short time they have spent together.

The Women and the College

The Women Countryman takes the greatest pleasure in commending the worthy student activities in this College of Agriculture. We were greatly pleased with the recent proposal from the women in the senior class in agriculture that they prepare the annual class banquet, the men to provide the needed materials. Likewise commendable was the enthusiasm with which the men of the class accepted the suggestion. We understand that in the near future the young women in the junior class will place a similar proposition before their classmates and we anticipate an equally cordial response.

The young women are a very important part of this institution and with the completion of the new Home Economics building will undoubtedly be a large proportion of the total registration. This spirit of cooperation and good fellowship between the men and the women is an important factor in our social life and the Countryman stands ready to further the spirit in every way within its power.

Stock Judging

Two years ago the New York State College of Agriculture sent its first stock judging team to compete in the Intercollegiate Stock Judging Contest at the National Dairy Show. This team secured fifth place. Last year's team took second place, the team this year brought home the championship, winning four out of five trophies offered. The history of stock-judging at Cornell is a story of steady progress. It must continue so.

Let us urge the students in this college not to rest on the laurels of our successful team but rather to work harder, not only to attain but to exceed the high mark set for them. No instruction in this college is more profitable for a student than the stock judging work and the benefits far exceed the efforts. "Everlastingly keeping at it is the secret of success." If this is the motto and the practice of every student interested in animal husbandry we shall turn out another winning team next fall. We have a reputation to sustain.

Inter-College Athletics

The Cornell Countryman extends its heartiest congratulations to the Soccer team representing this college for its glorious achievement in winning the Soccer championship, and thereby the cup for one year, without losing a single game. The college owes considerable to the men of this team and to Coach Collado.

To the cross-country team we also extend our appreciation. Although not successful in getting quite to the top place, they worked just as hard and deserve as much commendation. We must support the teams that don’t win as strongly as those that do.

The College of Agriculture now has a good even start for the inter-college championship. The next sport in season is basketball. For the past few years we have been very near the top in this activity but have lost at the finish by a very close margin.
This year let every able-bodied fellow get out and chase that ball around the Armory. Those of us who can’t make the team can surely get on the side lines and cheer. Our duty is plain, let us act accordingly.

There is no one thing that will do more to revolutionize dairying than the formation of cow-testing associations among our farmers. In this issue, Professor Savage gives a very clear outline of the purposes and benefits of such associations and submits a definite plan of organization. We hope that everyone who reads this article will give serious thought to the plan and will pass the article on to another farmer to read. The benefit to be received from such associations is not merely the finding out of the production of each cow but as well the training that will come to the farmer in leading him to think out a plan of work before he begins. The Cornell Countryman very strongly desires to see at least one cow-testing association in every dairy county in the nation. We are confident that rural betterment will be the result.

**GENERAL AGRICULTURAL NEWS**

The November issue of the *Review of Reviews* gives a most interesting account of the Farmers Co-operative demonstration work carried on under the direction of Dr. Seaman A. Knapp of the U. S. Department of Agriculture. This work bids fair to revolutionize farming and farming interests in the South. The work was started in 1904 in order to combat the cotton boll weevil which had at that time just begun its ravages; its scope, however, has broadened until now it has for its object an increase in the yield of all the farm crops.

The work is supported by a Congressional appropriation, by a liberal fund from the General Educational Board, by State legislatures, and by private subscriptions of farmers and business men. Its growth has been phenomenal. From one agent in 1904 it has increased to 430 agents at the present time; from one farm to 60,000 farms and from one state to thirteen states. The method of the work is to persuade a farmer in a given section to cultivate an acre or two of a certain crop according to directions furnished by the government, “the ten commandments of agriculture,” as Dr. Knapp calls them. The yield on the land cultivated according to government directions is frequently from 300 percent to 400 percent more than that obtained from similar land with the ordinary methods. This converts the farmer to the improved method and he at once begins to preach it to his neighbors.

* * *

In the October *Harpers’ Magazine*, Dr. A. D. Hall, director of the Rothamsted Experiment Station, gives an account of experiments carried on at that station which show that the soil is full of certain animal organisms of the Protozoa type which feed on the beneficent ammonia-making bacteria. By heating the soil the Protozoa, which are much more sensitive than the bacteria were destroyed and the yield on soil so treated was doubled. When the soil was treated with chemicals that destroyed the harmful organisms the yield was increased 30 per cent. As ammonia is the most expensive fertilizer which the farmer has to buy and as a very large per cent of the ammonia in manures is now lost because of these harmful organisms the principle discovered by these experiments will have far-reaching influence when they reach the stage of practical application.
In the last ten years 9,771,512 aliens have arrived in the United States. Southern Italians lead in number, 1,761,948, Jews are second, 970,263. The average amount of money possessed by each alien was $22. Spanish-Americans were richest averaging $104 each, and Koreans poorest, $7 each. The Jews averaged $13 each. The immigration in the last ten years is more than the combined population of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Delaware and New Jersey.—From the Country Gentleman.

Many of the farmers are complaining of the contract specifications for flour to be furnished the New York State Hospitals. The State Lunacy Commission advertises for bids for hard wheat flour. No reason is given for using hard wheat flour instead of soft wheat flour. Furthermore, it is stated that one-half of the people live on soft wheat flour. The wheat grown in New York and other eastern states is soft and would cost $10,000 less than hard wheat. This being so, why should not the State of New York buy the wheat grown by our farmers?

If anyone thinks automobiles are spoiling the horse market let him try to buy a good horse! He will be surprised to learn what is demanded. For the past ten years this cry of death to the horse business has frightened many eastern farmers out of a good opportunity. Their farms are ideal places for raising colts and they are close to the finest horse markets in the world. Yet in spite of these advantages our farmers have let the horse breeding business go largely to western farms. If western land can produce good horses and ship them 1,500 miles at a profit, what ought to be done in the east? What we need is more faith in business. There is a great opening for breeding the heavier type of carriage horses or horses for the army.

Sixteen state sanatoria, twenty-eight county hospitals, and twenty-one municipal hospitals for tuberculosis have been erected and provided for since January 1, 1909, says a bulletin of the National Association for the Study and Prevention of Tuberculosis, issued today.

Within the last two years the number of state institutions for tuberculosis has doubled, and the number of county and municipal institutions has increased from about 30 to 80. The expenditures of public money for the treatment of tuberculosis also has more than doubled. Not less than $3,000,000 of state money was appropriated for tuberculosis institutions in 1909, when 43 legislatures met, and over $600,000 in 1910, when only eleven legislatures were in session. The appropriations of countries and cities for tuberculosis hospitals and sanatoria in the last two years will aggregate fully $2,500,000, bringing the total of official appropriations for tuberculosis hospitals up to over $6,000,000 in the past two years.

In spite, however, of this good showing, the National Association for the Study and Prevention of Tuberculosis states that not one-tenth of the public provision for tuberculosis that is needed has been made. More than 250,000 tuberculosis patients are constantly without proper institutional treatment.

Grain Traffic on the Great Lakes.

(Press Notice for Bulletin 81.)


The system of inland waterways formed by the Great Lakes has done much toward making better and cheaper service in the marketing of a large part of the grain crops of the United States. Deepening the lake channels has made it possible to use larger vessels, and with the increased size of the carriers have come lower freight rates. A review of the past forty years, covering the principal events in this growth of cheap transportation, has just been published by the Department of Agriculture in a bulletin of the Bureau of Statistics.

In discussing improvements in lake channels, the report shows that in 1871
the ordinary depth of water at the shallowest points between Buffalo and Lakes Superior and Michigan was about 14 feet, while in 1909 this depth had been increased to 21 feet. Deepening the channel was accompanied by the building of larger boats. During 1871-1875 the average size of the vessels built on the lakes was 193 tons, of 100 cubic feet gross measurement and the average size of those built in 1906-1909 was 1,232 tons. The lake boats built now are more than six times as large as those built when the channel was 7 feet shallower.

While the average cargo of grain received at Buffalo for a season may be less than one-half that amount, 400,000 bushels is not an unusual cargo to be shipped in one vessel.

One ship cleared from Duluth on November 4, 1908, with 413,930 bushels of wheat, and sixteen days later cleared again from the same port, this time with a cargo of 462,374 bushels of flaxseed and oats. Each of these loads, if carried by rail, would have required 10 trains of about 40 cars each.

Freight rates charged for carrying grain on the lakes are much lower than in the days of shallower channels and smaller boats. The average rate for wheat from Chicago to Buffalo had decreased in 1906-1909 to less than one-fourth the average for 1871-1875, and in the past several years a considerable number of shipments of wheat have been carried over the thousand-mile routes from Chicago or Duluth to Buffalo for as little as one cent a bushel. Railroad freight rates on grain have declined also during the period covered by the Department's bulletin; the average rate from Chicago to New York by all-rail routes has been, for the past several years, less than one-half of the charges of thirty-five or forty years ago. During this time, the size of the box cars, the kind used to carry grain, has increased three-fold.

The larger cargoes of the lakes do not pass through Welland Canal, its depth being but two-thirds that of the shallowest passages between Buffalo and Chicago or Duluth, so the shipments to ports on Lake Ontario and the St. Lawrence River are much smaller than those to Lake Erie. Of the total grain shipped by lake from Duluth (and Superior), Chicago, and Milwaukee during the past ten or more years, only about seven percent was carried to Lake Ontario or the St. Lawrence River.

To ports east of Niagara, even allowing for the longer distance, freight rates on wheat are much higher than to ports on Lake Erie. From Chicago the rates to Montreal have for the past several years been about three times those to Buffalo.

A considerable number of tables are given to show receipts and shipments of grain at the different lake ports and the quantities carried over various routes.

**PRIZE FOR SCHOOLS—**The Tuberculosis Committee of the State Charities Aid Association announced to-day tentative plans for one of the biggest prize contests ever conducted in this state outside of Greater New York. A vacuum cleaning plant for installation in a public school has been given as first prize by the McCrum-Howell Company of New York, to go to the city having the largest sale of Red Cross Christmas Seals. The only condition imposed by the donor is that the winner of the prize must be a public school. The second and third prize for the contest have not been decided upon, nor have the judges been finally selected. The prize will be awarded on the basis of number of seals sold per capita of school population.

In making the announcement the State Charities Aid Association points out that although contests among schools or school children are generally frowned upon by school men, it believes that a contest of this kind, which will necessitate the constant preaching of school sanitation, for a prize awarded to schools to improve school sanitation, and not to individual pupils, is not only justified, but is a powerful agent for educating
the public to an appreciation of the value of school hygiene. During the course of the sale it is hoped to have every pupil in the state, outside of school hours, constantly urging the advantages of breathing dustless air in the schools.

The State Charities Aid Association has been appointed agent for the sale of the seals in New York State outside of Greater New York. The slogan for the sale this year is "$100,000 for Tuberculosis in New York State." Last year the sale amounted to $30,000. With the school contest and other similar methods of pushing publicity for the sale, it is expected that the proceeds this year will more than treble those of last year.

A PLATE OF BALDWIN APPLES SHOWN AT THE RECENT FRUIT EXHIBIT
The College of Agriculture made a big stride toward the intercollege championship by making a clean sweep of the soccer series, winning six games and losing none. The cup therefore comes to the college for a year from the College of Civil Engineering where it has been held the past year. The following is a list of games played and points scored:

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Ag's goal was not crossed during the season. The following is the lineup:

- C. W. Funk, '11 (Capt.);
- C. H. Lemon, '13;
- M. B. Goff, '13;
- H. Sonnenfeld, '12;
- H. B. Rogers, '12;
- H. W. de S. Wilson, '13 (mgr.);
- S. C. Bishop, '13; h. b. J. H. Neethling, '11;
- I. B. Lipman, '11;
- W. S. Stevens, '11;
- G. B. H. Cheu, '14;
- G. S. Rose, '13;
- N. V. Puga, '12;

A word of appreciation must be added for the consistent efforts of C. Collado, '11, in coaching the team. Mr. Collado worked hard every afternoon with the candidates and a large measure of their success is due to his unselfish efforts.

The regular November Assembly was held on Thursday evening, Nov. 3 in connection with the annual fruit exhibit. After the regular opening by the singing of the Alma Mater, some musical numbers were enjoyed, including a piano duet by Miss Avery, '13, and Miss Northrup, '13, and two selections by the agricultural violin quartet. Dean Bailey's address, which followed, was a powerful one. He discussed the prevailing idea that the college should turn out a man well trained in the practical side of farm life, and showed that a student must acquire elsewhere the ability to milk a cow and plow a straight furrow. The Dean read some good poems, including "The Pumpkin Pie" by Whittier. The meeting was closed with the singing of the Evening Song, after which, all remained to join in the usual social hour and to look over the Fruit Exhibit.

* * *

The regular meeting of the Agricultural Association took place on Tuesday evening, November 15. After the singing of the Alma Mater, W. D. Haselton, '12, gave a talk on cross-country prospects, urging all men to help Agriculture win the annual inter-college race on November 19. W. C. Funk, '11, gave a talk on Soccer and S. G. Judd, '11, related the incidents of the trip to the National Dairy Show. C. V. P. Young, of the physical training department, and treasurer of the inter-college league, presented the cup, won by the Soccer team, to the college. Business was then taken up. A motion was made and carried that the Association appropriate enough
money to maintain the girls' glee club for the year. After some discussion of the question of the best means of agricultural education in New York State, the meeting was closed by the singing of the Evening Song.

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Directly after the Association meeting on November 15, the senior class of the College of Agriculture, met and elected as officers the following students: A. L. Thompson, president, F. H. Hahnel, vice-president; Miss Grace Bennett, secretary; R. O. Mordorff, treasurer. The class voted to have a banquet at the college at some later date, not yet decided upon. The refreshments will be prepared by the girls of the class.

* * *

In getting four cups from the National Dairy Show, the Judging team brought honor to the College. The Jersey cup is here for the second time, and if won once more will remain permanently in our possession. Two cups are sweepstakes cups, donated by the National Dairy Show Association, and Hoards Dairyman, and the fourth cup was offered by the American Guernsey Cattle Club.

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An out-of-town newspaper reported that fifteen acres were to be taken from Alumni field for the new buildings of the Agricultural College. Several trustees of the University declared that this report was absolutely false. The land was surrendered to be used as an athletic field and no such disposition of it could be made. The board of trustees, however, are giving careful consideration to the best possible situation for the three new buildings, and about December first another meeting will be held to discuss more complete plans for the extension. Various plans for the development of the College of Agriculture are under consideration and will be discussed at this meeting.

* * *

The plan of having addresses by various men of importance in agriculture once or twice a week at noon under the auspices of the Extension Department is working well. A very enjoyable address by Mr. Tucker, editor of the Country Gentleman, and one by Dean Bailey on "The Farm House" are the latest addresses. The Dean's speech is found in other columns of this paper.

* * *

The class of 1914 in agriculture held a meeting on the evening of November 17, in the auditorium. After the regular business, a special program was enjoyed. It was opened by the singing of the Alma Mater by the class. Then followed a piano solo by Miss Foster; a reading by Miss Crosman; a song by the freshmen quartet, and a stunt by Mr. L. Hiler.

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Mr. W. J. Hoggson, of New York City, was in Ithaca for a few days in the middle of the month to discuss with Dean Bailey and the members of the faculty of the College of Agriculture regarding the feasibility of his scheme for co-operative farming. Mr. Hoggson is a member of the firm of Hoggson Brothers, architects, designers, and interior decorators. He believes the failure of cooperative schemes in the past has been due to the lack of efficient management. Mr. Hoggson has already started a colony in North Carolina on some land which he has purchased and philanthropists and others are watching the development of the colony. There are eleven families on his land. They were brought to America from Holland and are particularly well suited to work out the plan.

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Professor John Craig spoke before the Y. M. C. A. in Brooklyn on the evening of November 16. His subject was "Opportunities in Horticulture." On the evening of November 17, he delivered a lecture on "Civil Improvement" before the Civic Improvement Society of Pearl River, Rockland County.

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At the annual convention of the National Butter Makers' Association
recently held at Chicago, Mr. H. A. Ayres, '08, of Elsie, Michigan, received a mark on his butter of 95.66, which places him second in the list of states for competitors for state cups. F. S. Wright, of Etna, New York, '01, received a mark of 94.66. Another Cornell dairy student, H. W. Middaugh, '06, received a mark of 93.66. There were 600 entries in the butter class from every state in the Union and very few exhibitors received a higher mark than did our Cornell dairy students. This speaks well for the good work done by our butter instructor, W. E. Griffith, and his able assistants.

The department of Poultry Husbandry has reared this year approximately 4,000 chickens on the new poultry farm of 54 acres at Forest Home.

Applications for the Winter Poultry Course have been unusually large. The course was filled about two months before the date of opening, and over 30 students have been refused admission on account of lack of accommodations. No students have been accepted from other states than New York.

The poultry department has furnished pure bred stock for the Ohio State Experiment Station at Wooster and the Indiana State Experiment Station at Lafayette.

L. C. Schwartz, E. W. Benjamin, and J. E. Dougherty have been appointed student assistants in Poultry Husbandry.

Dr. L. H. Bolley, pathologist of the North Dakota Experiment Station, addressed the Plant Doctors on Friday evening, November 11th, on the subject of Fungal Diseases as a Factor in Soil Sanitation and Crop Rotation.

The first meeting of the Cornell Section of the American Society of Bacteriology was held on the evening of November 11. Professor Stocking, of the Department of Dairy Industry, spoke on "Milk Inspection from the Bacteriological Standpoint." Committees were appointed to plan for the reception of the members of the Society who held their annual convention in Ithaca last month. The officers of the Cornell section for this year are: H. N. Redfield, president; N. J. Prucha, vice-president; and H. W. Conn, secretary and treasurer. Meetings will be held regularly in the future on the second and fourth Fridays of each month.

By the time this issue appears, the short course students will be here, three hundred strong or more. There are five courses, General Agriculture, Dairy Industry, Poultry Husbandry, Horticulture, and Home Economics. All of these courses have had very heavy registration, especially the Poultry Husbandry department, which has been obliged to refuse twenty applications for admission. The regular December Assembly will be in the form of a welcome to the short course men by the regular students. A "Get Wise" meeting will acquaint the men with the activities of the college.

Professor A. D. MacGillivary of the Department of Entomology delivered an interesting lecture before the Agassiz Club on November ninth at the Agricultural College. His subject was "Pioneers of Entomology."

The junior class in Agriculture elected the following officers for the year 1910-11. President H. B. Rogers, '12; vice-president, Miss M. F. Dudley, '12; secretary, D. D. Ward, '12; treasurer, H. B. Knapp, '12.

At a meeting of the Agriculture cross-country candidates on November second, W. D. Haselton, '12, was elected captain for the present year. The team voted to approve the motion of the Cross Country club that the intercollege cross country race be held on or before November 19.
Professor C. G. Woodbury of Purdue University visited Cornell and the Agricultural College in November in the interests of his university. Prof. Woodbury has charge of the College of Horticulture at Purdue and while here consulted the department of Horticulture concerning ideas with reference to origin of experimental work in orcharding. While here he was the guest of different members of the Agricultural faculty.

* * *

The class in sub-tropical horticulture received a consignment of special tropical fruits, from Florida and other tropics. They will receive these rare fruits weekly and will use them in their study. In this consignment were grape fruits of exceptional size and quality, also oranges, limes, pomegranates, alligator pears, sugar apples, guava and several rare types of fruits from these torrid countries.

* * *

Dean Bailey took a short extension trip through New York State in the beginning of November. He spoke at Lawyersville on November first, also at Albany where he lectured before the State Committee, which was holding a convention to devise a plan for the organization of all agricultural institutions in the state and for the uplift of rural districts.

* * *

The new greenhouse was opened with a chrysanthemum exhibition and flower show. Fifty varieties of chrysanthemums, imported and grown under the personal direction of Professor Craig and Mr. Cosh, were shown. Most of them were of Japanese origin imported from France, England and Australia.

* * *

The freshman class in agriculture decided at a meeting to levy a tax of twenty-five cents to help cover the expenses of the new trophy room. At the same meeting, a constitution was read and adopted.

* * *

Mr. Jared Van Wagemann, Sr., of Lawyersville, N. Y., a successful farmer, and father of Jared Van Wagemann, B. S. A. '91, visited Secretary Mann, and the College the last of November.

* * *

During October Professor Stocking attended the National Dairy Show at Chicago. At this show he judged the milk and cream exhibits. He also read a paper entitled "Training Men for College and Experiment Station Work," at the annual meeting of the Official Dairy Instructors Association. He was elected secretary-treasurer of this association.

The department of Dairy Industry sent exhibits of milk and cheese to the State Fair and received the following scores: Creamery butter, 99.16; butter from gathered cream, 93.33; Young America cheese, 99.24; sage cheese, 97.50; neufchatel, 97.50; cream cheese, 97.00. The cheese was made by G. N. Tobey and the butter by Chas. Kindelberger. The department received complimentary medals for the highest score in export and home trade cheese.

The number of winter course students registered up to date in the Department of Dairy Industry is 104. There are only two from outside the state, one from Louisiana and two from Pennsylvania.

Professor John Michaels, formerly of Wisconsin will take charge of the cheese work in the short course. C. E. Dutton, one of the inspectors of the State Department of Agriculture will also give instruction in the winter course.

* * *

J. C. Weld of the Dairy Inspection Department of the United States Department of Agriculture visited the College in the middle of November.
FORMER STUDENTS

Peter Langwell of Rochester, N. Y. was a student at the Cornell Dairy School in the class of 1894. He was a studious man and had no other business here than to gain and to retain all of the dairy information possible. He succeeded in his undertaking and at the end of the term the Dairy School faculty secured for him a position with Theodore E. Baselin of Croghan, Lewis Co., N. Y. He took charge of the small dairy farm of Mr. Baselin. At the expiration of his term with Mr. Baselin he moved to Sodus, N. Y. A co-operative creamery had been erected there and the board of directors engaged him as butter maker and general manager of the business. He was so successful in the production of fancy butter that the company erected a canning factory, the management of which was placed in his hands. This was also a successful undertaking and later they erected another creamery at Wolcott, N. Y. Mr. Langwell was also in charge of this plant. He remained there for several years, when five years ago he accepted a position with the Brighton Place Dairy Co. of Rochester, N. Y. His work included everything from the buying to the selling of milk and cream, supplies for the business, collecting and banking, hiring and discharging employees and having full management of the company's business. They had three small routes when he took the work in charge five years ago, and today they have twelve routes doing a business of $150,000 per year. About the first of October of this year he sold his stock which he held in the Brighton Place Dairy Co. and resigned his position as business manager. Since then he has organized a company of his own and has full control of the new company's affairs. Judging from the success with which he has met since he has left Cornell, there seems to be little danger of failure in his new undertaking. His acquaintance with the consumers of sanitary milk and cream in Rochester, together with his long, practical and honorable career in the milk industry, will secure for him his share of business.

(W. W. HALL.)

'B98, B. S. A.—E. Dwight Sandersen, recently director and entomologist of the New Hampshire agricultural experiment station, is now dean of the department of agriculture of the West Virginia University, Morgantown, W. Va.

'B99, B. S. A.—Science says that Dr. Heinrich Hasselbring, of the Bureau of Plant Industry, United States Department of Agriculture, will be in residence at the department of botany in the University of Chicago during the winter quarter (January-March) of the present academic year. He will give a course in plant pathology and will direct special work dealing with parasitic fungi. It is the purpose to establish in the department work in plant pathology on a physiological basis.

'B99, B. S. A.—Walter Mulford, Junior professor of forestry engineering at the University of Michigan visited Dean Bailey and the college, November fourth and fifth, attending the fruit show while here.
'03, B. S. A.—Herbert A. Hopper who is at present a professor at the University of California has recently bought a farm near Ithaca and contemplates living on it in the near future.

Sp. A.—H. C. Crouch was at the National Dairy show at Chicago and is still superintendent of the Dairy Farm at the University of Illinois.

'05, B. S. A.—G. Wendell Bush has been very successful in the improving of the production on the Arden Farms Dairy, Arden, N. Y. This farm is on the Harriman estate.

Sp. A.—F. W. Shimel has recently received the position as manager of the dairy farm of Mr. W. S. Rice at Adams, N. Y.

'06, B. S. A.—Walter Tailbey exhibited three Cheshires at the New York State Fair this fall winning 2 first prizes and a second.

'06, B. S. A.—B. H. Crocheron is principal of the agricultural school at Philopoli, Md.

'06, B. S. A.—L. B. Gable of Weybridge, Pa. is supervisor of his town.

'06, B. S. A.—C. F. Shaw who is assistant in the department of Soils at the Pennsylvania State College of Agriculture has been making an extensive soil survey.

'07, B. S. A.—G. D. Cooper is at present in George H. Miller’s office in Boston in charge of the landscape plans for Corey, “the new steel city of the South.” His address is 25 Hancock street, Boston, Mass.

'07,—J. Louis Roberts, is managing a large fruit farm at Mosier, a fruit growing region only a few miles from Hood River, Oregon. Mr. Roberts also owns an orchard in Hood River.

'08, B. S. A.—Milton P. Jones is living at 11 Park Place, Saranac Lake, N. Y.

'08, B. S. A.—L. R. Gracy’s address is 39 Baker street, Saranac Lake, N. Y. He is recovering from a serious illness.

'08, B. S. A.—J. Vincent Jacoby’s address is R. F. D., Basking Ridge, N. J.

'08—The COUNTRYMAN is in receipt of an outline of the courses given in botany and horticulture at the college of Hawaii. The work is in charge of Professor Vaughan MacCaughey. Besides explaining the nature of the courses offered by the college, reference is made to its equipment, lectures and Botanical and Horticultural conditions in Hawaii.

'08, B. S. A.—Frank S. Hayden has been spending the last two years in the fruit growing regions of Texas, Utah, and Oregon learning the methods of packing and handling fruit used there.

'09, B. S. A.—Edwin W. Mitchell has nearly completed his first year on his fine fruit farm at Stuyvesant Falls, N. Y. He has over 15,000 barrels of fruit, pears and apples. Besides general farming operations he has conducted spraying experiments for the Grisilli Co. He is secretary and treasurer of the Kinderhook Pomological Society.

'09, B. S. A.—Paul Judson has located in the Kinderhook fruit section where he is laying out an apple orchard of 4,000 trees this fall.

'10, B. S. A.—Morris C. Oldham’s address is 619 East High street, Springfield, Ohio.

'10, Ph. D.—Leonard Haseman and Mrs. Haseman (Elosia B. Fish, A.B., ’10) live at Couzins and Anthony streets Columbia, Mo. Dr. Haseman is instructor in entomology in the University of Missouri.

'10,—Ralph R. Root, B. S. A., ’10, is in the Harvard School of Landscape Architecture, and Llewellyn M. Buell, A.B., ’10, is taking graduate work in English. The address of the two is 49 College House, Cambridge, Mass.

'10, B. S. A.—H. C. Young is now located with the Bell Telephone Co. in Pittsburg, Pa. His address is 727 Negley Ave., Pittsburgh, Pa.

'10, B. S. A.—Vincent J. Frost who has been in the employ of the American Steel & Wire Co. since last March, has since the early part of November been testing spray machines and spray nozzles in the
laboratory of the department of Farm Mechanics. He expects to be sent to Florida early in December.

'10, B. S. A.—Roy D. Anthony who was also connected with the American Steel & Wire Co. is now instructing in the department of Pomology here in the University.

'10, B. S. A.—Boyd D. Gilbert has recently completed his work on the soil survey of Monroe County, N. Y.

Ex., '11, B. S. A.—E. D. Smith of Delevan, N. Y. writes from Hood River, Oregon, that he is getting good experience in packing and handling fruit in the west.
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2d Prize, O. J. Groth, Cedarburg, Wis. (Tub) ......... Score 93.50
3d Prize, S. B. Cook, Bloomer, Wis. (Tub) ............. Score 93.33

Minnesota State Fair
1st Prize, Theo. Peterson, Maple Plain, Minn. ......... Score 97.50
2d Prize, G. A. Lee, Kingston, Minn. .................. Score 97.
3d Prize, F. Zimmerman, Winsted, Minn. ............... Score 96.50

Oklahoma State Fair
1st Prize, H. R. Johnson, Blackwell, Okla. .......... ....

New York State Fair
1st Prize, S. H. Northrop, Richville, N. Y. .......... Score 97.66

North Dakota State Fair
1st Prize, G. Kruempel, La Moure, N. D. .............. Score 95.

California State Fair
1st Prize, H. Ostergaard, Etna, Cal. .................. Score 95.
2d Prize, P. Peterson, Fresno, Cal. .................... Score 94.50
3d Prize, L. P. Shaw, Stockton, Cal. .................. Score 94.
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THE FUTURE OF ALASKA

By R. S. Tarr

Professor of Physical Geography, Cornell University

A WELL known man, an adviser of Secretary Seward urged the purchase of Alaska on three grounds:
the value of its fisheries; the future economic value of its scenery; and its usefulness as a source of ice for the Pacific Coast.

Of ice there is undoubtedly an abundance in Alaska, and in many places it comes down to the sea, where it breaks off in chunks convenient for transportation. Locally it is used, for instance by the army post near Valdez, which secures its entire ice supply from small icebergs that float away from a glacier nearby; but it is not sent southwards to the states for the simple reason that ice can now be cheaply manufactured, a fact which the adviser of Seward could not foresee.

Alaska has long suffered under the stigma of its supposed icy nature first cast upon it by the early opponents of "expansion" a half century ago. It is far north; it is a mountainous land; and its highest mountains face the ocean and receive a heavy snowfall from the damp winds that prevail from the Pacific. Consequently there are vast snowfields, and great glaciers, and since they are where one can easily see them as he goes along the coast the fact of their presence is widely known. But between the snowfields and the sea, and back of the mountains, in the interior of Alaska, are great tracts of country neither snow nor ice-covered.

Some of these tracts support forest, certainly a resource for the future, now wisely reserved for the use of Alaska and Alaskans, and prohibited from export. That these forests will be cleared for farms, and that farming will develop in the treeless valleys and on the plateaus of the interior, I will not prophesy. Some parts certainly will not be farmed, either because of the climate or because of the ruggedness of the surface. But there are other parts concerning which one surely cannot speak negatively with such certainty. Already hardy crops are raised, as yet mainly experimentally or in small gardens, and there are those who are enthusiastic believers in a future agriculture for Alaska. Such agriculture as develops will necessarily be limited to certain areas of favorable soil and climate, and to hardy crops. To the casual observer the conditions in parts of Alaska seem no more adverse than those in northern Sweden, Norway and Russia, which lie within the zone of grain culture.

Probably no one but the "boomer" would hold that Alaska will ever become a great agricultural land; but there seems no reason to doubt that, as its population and industries develop greater stability, this territory will be able to supply a very considerable proportion of the food consumed, thereby greatly reducing the cost of living. I have eaten Alaskan potatoes, peas, beans, lettuce, cherries, raspberries and strawberries; yet practically all of these and other vegetables and fruits now eaten in Alaska are brought from the states by
long and difficult routes, and sold to consumers at very high prices.

Besides the raising of crops, there seems promise of an agricultural industry in connection with grazing. There are extensive natural pastures, and sheep, goat and cattle raising are certainly among the future possibilities. Already this is done in a small way, but as yet there is no extensive development of this industry. Far to the north, on the tundras, the reindeer is now being raised, and when the rest of the world becomes sufficiently crowded there will certainly be opportunity for a few to live here, as the Lapps do in Norway.

In Alaska, as in the case of other northern lands, the fisheries were the first of the industries to develop. The whale, the sea otter, and the fur seal have each yielded a rich harvest. The whale is so reduced in number that the industry of whaling is now of little value; the sea otter is all but extinct; and the fur seal is approaching the same condition; but the fur seal has yielded over 3,000,000 skins since 1868, at a value of about $50,000,000. There yet remain other marine animals of great economic value, notably the cod, halibut, herring and salmon. Between 1867 and 1905 over 34,000,000 cod, valued at more than $4,000,000 have been caught in Alaskan waters; and in 1905, the halibut catch was valued at $161,000, and the herring at $117,000. Each of these species of fish is a resource of value for the future.

It is the salmon, however, that is today the really important product of Alaskan fisheries, and, next to gold, the most valuable of Alaskan products. Each spring and summer the salmon runs up innumerable Alaskan streams to spawn in fresh water. I will not attempt to describe the scene of the struggling masses of these fish in their frantic rush up stream, for it would seem like exaggeration to those who are unfamiliar with it. Over two million were caught in 1905; there were forty-seven canneries; and the value of the catch was about four million dollars. This may well be a
great and permanent source of revenue for the future, provided the slaughter is restricted and regulated. At the present rate, and by present methods, this resource promises to follow closely the sea otter and the fur seal. There is an opportunity for the application of the principle of conservation here as well as in the coal fields about which we have heard so much.

Alaska was much in the public mind at the time of its purchase in 1867, and it sprang into prominence again in 1896 when gold was discovered in the Klondike. Ever since then it has maintained its prominence. In 1895, a little over two million dollars' worth of gold came from Alaska; in 1908, over nineteen million dollars' worth was obtained. Altogether over $160,000,000 in gold has been obtained from this territory since 1890; and we paid but $7,200,000 for the entire territory, seal, salmon, gold and other resources included! How long in the future this gold supply will continue to furnish nineteen or twenty million dollars' worth a year cannot be told; but of one thing we may be certain, there is yet much gold to come.

Extensive deposits of copper are also known to exist, though as yet little is mined because of the difficulties of transportation. There are vast coal fields, with coal of the very best quality. It has been estimated that there is more coal in Alaska than there was in Pennsylvania before mining began there, and much of it is easily accessible to tide water; but as yet there is practically no mining of coal.

Just now attention is directed to the coal and copper resources, and to the gold. The development of these is checked, or prevented, by the lack of adequate transportation facilities. The one great need of Alaska, and the need upon which its future depends, is the provision of such facilities. The sea coast is easily accessible to boats in all parts except the Arctic coast; but the interior is defended by the lofty snow-covered mountain ranges across which there is no serviceable pass. This barrier is partly broken by the deep fiords which lead up to Skagway, and is there crossed by a short railway over White Pass, made famous in the days of the rush to the Klondike; but this leads into Canada, and travel thence must be down the Yukon by boat, or, in winter, by sledge. By a long ocean voyage the barrier may be passed around on its western end, and travel thence to the interior be continued up the Yukon and its tributaries. Although this travel is slow, difficult, tedious, and expensive, it is an improvement on the early days, in the nineties, when even glaciers served as highways for hordes of prospectors.

The extensive deposits of rich copper ore in the vicinity of Mt. Wrangell, the gold of the Tanana Valley, and the coal of the Controller Bay region have combined to offer such inducement to capital that a railway is now being built from the seacoast at Cordova up the Copper River Valley. How difficult this route really is may be inferred from the fact that the railway crosses the Copper river between two great glaciers from whose fronts icebergs are discharged into the river from ice-cliffs two or three miles long and over two hundred feet high; and the tracks are actually laid for several
miles on a third glacier. What may happen to the railway if one of these glaciers advances is easily understood. Yet this route was chosen by engineers as the most available one to the mineral deposits of the interior. With the completion of the railway, and the opening of the copper and coal mines, Alaska will enter upon a new era of industrial development.

Among the resources of Alaska prophesied by the man mentioned in the first paragraph of this article, is that of scenery. Such a feature is not, perhaps, commonly thought of as a resource of economic value; yet if one thinks of Niagara, or the White Mountains, or of Switzerland, its importance is easily seen. The inhabitants of these places, in any event, appreciate the economic value of the scenic resource.

Alaska has already received benefit from this resource, and the stream of tourists is increasing annually. It is, in my opinion, to be one of the great factors in the future development of Alaska, not only because of the money which it brings directly but also because of its influence on the improvement of transportation facilities. As a crude illustration I may refer to a case at Valdez. There is, I believe, just one automobile in Alaska, and that meets each incoming boat at the pier in Valdez, and whirls such tourists as can be taken in the limited time and space available over a rough, improvised road three miles or more to the front of Valdez glacier. This may be the forerunner of a system of roads, paths, inclined railways and other conveniences for a coming horde of travellers. A century ago one would have been a bold prophet who predicted anything approaching the present facilities for “seeing Switzerland” which are now but commonplace there.

Whether Alaskan scenery draws the multitude or not, it deserves to do so. Alaska is truly a wonderland, and without rival in all the world. For a thousand miles one can travel straight away, through a maze of fiords, on water as quiet as that of Lake Cayuga, with wooded mountain slopes and steep precipices coming down to the waters edge, and in background towering peaks of snow-capped mountains rising one behind the other. Here and there a glacier is seen, and if the boat goes into one of the branch fiords, one may sail up to the front of a glacier beside which the largest glacier of the Alps is insignificant, with an ice-cliff two or three hundred feet high from which great masses are crashing to add to the multitude of icebergs floating in the waters of the fiord.

As yet, most tourists have been content with this much, and have gone away amply repaid and deeply impressed. But this is only the beginning. Going farther and leaving the fiords, the boat sails along what is, I am certain, the most magnificent mountain panorama in the world. For three hundred miles rises a massive, snow-capped mountain barrier, with numerous peaks of over 15,000 feet culminating in that wonderful pyramid of Mt. St. Elias whose crest is 18,000 feet high. The entire mountain, white with snow down to within 3000 feet of sea level, is visible from base to summit, and so grand is the scale, that it seems near at hand, though really twenty or thirty miles away. Innumerable glaciers descend from this mountain range, one, the largest in North America, having an area equal to that of Rhode Island.

At present the traveller must content himself with the glimpse of this magnificent mountain scenery from a ship off shore; but a few, taking their own boats and provisions, have penetrated into this maze of mountains and glaciers, and have climbed some of their slopes, and explored some of their glaciers. No word picture that I could give, no photographs that could be taken, can give any adequate idea of the grandeur of that scenery, and I shall make no attempt to portray it. Some day it may be opened to the tourist; it is one of the undeveloped resources of Alaska, with great possibilities for the future.
THOUGHT FOR THE COUNTRY CHURCH

By A. R. Mann
Secretary to the College of Agriculture

With the renewed interest in farming as a life work, and the realization of the need for redirection in many phases of country life, there has gone forth a challenge to all organizations and institutions operating in country districts as to how effectively they are meeting their appointed tasks. Of the institutions in the open country, the ones fundamental are the school and the church. The school has been so thoroughly challenged that essential changes are in process. Special attention is now being focused on the country church, and religious and secular bodies alike are giving thought to its functions and how it may enlarge its efficiency. Out of this widespread intelligent discussion there will come constructive measures for the better adaptation of the rural church to its particular task.

A significant "Country Church Conference" was held under the auspices of the County Work Department of the International Committee of the Young Men's Christian Associations, at the International Committee Building, New York City, on December 1, 1910. It was attended by invited delegates from country churches, the Federated Council of Churches, theological seminaries, agricultural colleges, the United States Department of Agriculture, missionary societies, the Young Women's Christian Associations and the Young Men's Christian Associations. This is the second large conference on this question that the energetic County Work Department has held. As this Department of the Y. M. C. A. confines its efforts entirely to rural districts, in many of which it is becoming a potent factor in the lives of young men, it could very appropriately stand sponsor for such an interdenominational gathering.

Five large questions were before the conference for consideration. Each was presented briefly by some one specially qualified to present it, after which there was general discussion. A committee of one was designated to bring in at the conclusion of the conference a summary statement of the main points of agreement in the discussion of each topic. These summaries were separately approved by the entire body. They are given below, together with the topics, and are well worth thoughtful consideration, as they are a distinct contribution to the effort to clarify our conception of the functions and problems of the
country church. They are necessarily terse, but are fraught with suggestion.

**Topic 1.** "The Teaching of Religion in the Country," presented by Dr. Warren H. Wilson, Superintendent of the Department of Church and Country Life, Presbyterian Board.

"The Gospel is good seed. It is not always productive seed. Its productiveness is conditioned by the soil. What of the soil for the seed as sown in the rural districts?

"Rural civilization is in process of reconstruction. It gathers about four centers: the store, the school, the church, the family. All of these are out of repair.

"There is a difference of opinion regarding character and life conditions in country districts, some maintaining that personal morality is at high level while standards of social ethics are low, some contending that the standards of personal morality are by no means ideal.

"Certain conclusions find general agreement:

1. The teaching of religion in rural districts must be systematic, but not unwisely divisive. Emphasize the great fundamental and universal phases of truth, not the points of difference.

2. Fit leaders are necessary. If they are country born and equally well trained, so much the better. In any case, they must find the intelligent and sympathetic point of view for country work, if they are there to succeed.

3. Greater insistence upon the teaching in our theological schools of a social gospel, founded on the teaching of Jesus and the standards of the New Testament, is eminently desirable. The truest social gospel is based upon revealed religion and has due recognition of the supernatural.

4. The coming of the community rural school may be very influential in the location and the work of the community rural church.

5. The pastor in the rural districts should enter upon a course of systematic teaching and training of his people, ministering not only to the distinctively religious life, but to the quickening of the intellectual life as well. For the accomplishment of this end the minister himself must be a man of spiritual and intellectual resource.

6. The multiplication of weak and struggling churches in any community is an obstacle and a reproach to the cause of religion. The chief objective of such multiplied churches will inevitably be, or become, the effort for the self-perpetuation of the individual church. There should be cooperation, which will eventually lead to confederation and consolidation wherever the most statesmanlike policy in any community so directs.

**Topic 2.** "The Function of the Country Church," presented by Dean Fiske, Oberlin Theological School.

"Capable leadership of the country church is of primary importance. The broadening of the church is necessary to its maximum of service to the rural community. The church is the fundamental agency of human welfare. The County Work of the Y. M. C. A. is supplemental and cooperative in its relation to the country church. Upon personality and its efficiency must depend efficiency in both church and County Work."

**Topic 3.** "Country Church Finances and Administration," presented by Prof. Thos. C. Hall, Union Theological School.

1. The financial support given to the Christian ministry in the country church should be determined by the living wage that obtains among the farmers in the community.

2. Country church non-support is due not to inability but to lack of liberality. A more generous support, not only financially, but in the general work, is desirable, and a plea along this line should be made more frequently.

3. There should be local independence and autonomy in finance, in government, and in determining local policies. An attempt should be made to adapt the work of the church to the need of the community.
"4. The work of agricultural colleges is supplementary to the work of the seminary in further training of the ministry and should be approved and encouraged.

"5. The church and church ministry should be looked upon as being in command of the forces and in a position to direct movements for community betterment."

**Topic 4.** "Cooperation and Integration of Country Community Institutions," presented by President Butterfield, Massachusetts Agricultural College.

"Some agency is necessary to coordinate rural social institutions.

"A practical demonstration in terms of country life should be made to result in the federation of the forces in rural communities.

"The federating and unifying power of the Y. M. C. A. is recognized.

"The economic problem and the associative problem are fundamental to all progress in rural uplift.

"There must be men in the ministry who are perfectly loyal to the country.

"A clearer definition of the community should be established, in terms of country life."

The following resolution was added to the report on this topic:

"Resolved that we call the attention of all the pastors and churches, especially in the country, to the desirability of forming inter-church federations in all the counties as an important means of carrying into effect the program outlined at this conference."

**Topic 5.** "Country Community Building," presented by Prof. Carver, Harvard University.

"Further progress in country community building calls for a more adequate provision, through institutions founded for such purposes, of men selected, specifically trained, and enlisted for life in rural community service. Native talent, enriched intelligence, tried sympathies, resolute will; in short, an individually refined and a socially cultured personality, these are the presuppositions of a leadership equal to the constructive program by which the new country community is to emerge out of the old without losing the worthy ideals of the old."

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**STUDENTS' ASSOCIATION**

The attention of all present and former students is called to the annual meeting of the Students' Association of the New York State College of Agriculture at the College on February 22d and 23d, the first session to convene at 10 A. M. on the 22d. In addition to the business sessions covering the work of the past and the coming year, it is intended to make the reunion of former students a special feature. It is hoped that those who have gone out from the College will make the most of this opportunity to meet with their fellow Cornellians.

Members of the Association will be interested to know that the former students in the College who are now resident in Suffolk County will meet under the auspices of the Association at Riverhead, L. I., on January 27th, in connection with the School of Agriculture to be held there by the College. The special topic to be discussed around the dinner table will be the work that can be done in Suffolk County by the former students. Representatives from the College will be present.

A similar meeting of Cornellians was held in St. Lawrence County on the call of the President of the Association in connection with the recent meeting of the State Dairymen's Association. Why may not other counties do the same? It is worth while to keep in touch with one another. That is what the Association stands for.
WALTER WAGOR HALL

By H. H. Wing

Professor of Animal Husbandry, Cornell University

Walter Wagor Hall from 1894–1908, Instructor in Cheese Making in the College of Agriculture, died at his home in Gouverneur, N. Y., Dec. 15th, 1910, at the age of 61 years.

He was born Aug. 19, 1849, on the farm in St. Lawrence County near Gouverneur where his father, brother and sister still reside. His parents were of New England stock and settled in St. Lawrence County when that region was still considered a wilderness. He grew up amid the surroundings of a dairy farm and enjoyed rather better educational facilities than fell to the lot of most boys in his condition at that time, spending some time at one of the better academies. In early manhood he became interested in cheese making and soon embarked in the business on his own account. In this he met with a good degree of success. He was also active in the political affairs of his town and county and was an enthusiastic worker in the Democratic party.

In 1888, the newly organized State Dairy Department under the commissionership of Hon. Josiah K. Brown, began systematic instruction in butter and cheese making and Mr. Hall was chosen one of the three cheese instructors whom the Dairy Commissioner was authorized to appoint; his colleagues being Geo. A. Smith, now of the State Experiment Station at Geneva, N. Y., and Milton T. Morgan, who has been dead for several years. Mr. Hall received his appointment from Commissioner Brown, June 13, 1888. It is only fair to say that Mr. Hall received his first appointment more as a reward for his political services than for any other reason; but he had no sooner entered upon his work than he recognized the importance of putting forth his best efforts not only in imparting instruction but in improving his own knowledge and from that time forward he became an earnest enthusiastic student of everything pertaining not only to the practical and theoretical sides of cheese making but to the dairy industry as a whole. Originally appointed strictly for political reasons through his hard study and energetic devotion to duty, his services became so valuable to the Dairy Department, afterwards the State Department of Agriculture, that he remained connected with the Department to the day of his death and through all of its political changes served under four different commissioners. In 1894, when short courses in Dairy Industry were established in the College of Agriculture, it became necessary to find a competent instructor in cheese making, Mr. Hall was chosen for the position, being detailed from the State Department for the three winter months for this purpose and in this relation he continued until 1908, when failing health compelled him to retire. Here his energies were turned in a new direction, coming to the work of teaching rather late in life and with no preparation or experience in similar lines, he was at once successful, largely because he, himself, was a student, because he was interested in young men and because he spared no pains or effort to help along those who were striving to improve their condition through better education. He saw the necessity of further study himself and for the first few years was probably a harder student than any of those who took instruction from him. An energetic and hard worker, himself, he was always ready to lend aid to those who were making earnest effort to improve, no matter how dull or how plodding they might be; but for the careless, indifferent and lazy, he had no patience and turned upon them the weight of his sarcasm in such a way as often to stimulate them to better effort. During all the time that he was instructor in the College
of Agriculture his work during the
remainder of the year was largely in
actual instruction in cheese making in
the cheese factories of the State. Here,
again, he came in contact with
many of those who were his students
during the short winter term and in
this way was able to exert still further
influence over them. Probably no
man has exerted a greater or better
influence in improving actual factory
conditions in cheese making in this
State than Mr. Hall and his influence
will continue to be felt during the
lives of a large number of the present
generation of cheese makers. In
1898, he was made Secretary of the
New York State Dairymen’s Associa-
tion at a time when the affairs of the
society were at a rather low ebb. By
inaugurating exhibitions of butter and
cheese and dairy implements and sup-
plies at the annual conventions he
succeeded in arousing new interest
and enthusiasm and greatly extended
the work and influence of the Associa-
tion. He remained Secretary of the
Association till 1907, when he was
made President. At the Pan-Ameri-
can Exposition at Buffalo in 1901, he
was the Commissioner of New York
State for the exhibit of dairy products
and it was largely due to his efforts
that New York won in competition
with the other states in the exhibit
of butter and cheese at this exposition.

Mr. Hall was a man of high ideals
and was a great admirer of all who
had the courage of their convictions.
Though a life-long democrat he refused
to follow his party under the leader-
ship of Bryan and voted for McKinley
and afterward for Hughes. For the
latter he had a great admiration and
unbounded respect. Mr. Hall was a
genial companion, easy in conversa-
tion and with a large fund of anecdote
and experience. He was a warm and
loyal friend to those who commanded
his friendship and respect. His loy-
alty to his colleagues and superiors was
steadfast and he expended his energy
in the discharge of his duties as he
came to them without fear or
question.

Mr. Hall was very fortunate in his
family. He was married in 1878 to
Miss Emma Holt of Carthage, N. Y.,
and had the satisfaction of seeing a
son and two daughters come to
maturity and occupy useful places in
the world.

BACK TO THE FARM

By H. W. Collingwood

Editor of The Rural New Yorker

An Address delivered before the Students of the New York State College of Agriculture

YOU young men must of necessity
be teachers and makers of his-
tory. You cannot be anything else
and satisfy the ambition which drove
you here. No man can attend Cor-
nell for even a short course and after-
wards shirk the obligation which goes
with the teacher. A man will teach
either good or evil. Much is rightly
expected of the educated man; that
is why when he falls down with that
education he is a teacher of evil be-
cause by his action he destroys the
ideal of many a poor boy who dreams
of what college and books can do for
him. I am not a teacher, though I
presume I ought to be. We have
thought that the two great determin-
ating forces of life are heredity and
environment. I have them both
fully worked out in me. My mother
was a teacher and so was my mother-
in-law. My sisters are teachers. I
married a teacher and it is my hope
that my daughter will also be a teach-
er and yet even while surrounded by
this great array of classified and well
arranged education I feel that I
should prove a failure in the school
room. I feel sometimes as though I
may lay down a new rule or law of
natural force, and that is when a poor
fellow gets in between heredity and
environment he is likely to be crushed
to pieces. If I were to give you
young men one bit of strong advice
that should render success in life sure, I should first of all advise you to pick out some suitable school marm and prove yourself worthy to marry her and then immediately decide to let her do all the teaching and all the directing in her school of one individual. Why then does this self-confessed failure come here and tell you young men about your life business? I do not come for that purpose. I am not a teacher but I am an old boy and I carry with me every day that I live scars and knot holes that were put into my character and into my ability to work, by the education, so called, which I received in the country schools of 40 years ago. I have felt that the boys that are taught should have a chance at the discussion of education as well as those who are to teach. Everything in nature changes except human nature. That remains the same in all ages and the boy of today in a country town is much like the boy of 40 years ago in his attitude toward history. You young men are making history, but you will not know just what you have made until 30 years from now. You probably think that you touch the vital things of life by standing up on your toes. What I mean is that it is human nature to feel in one's heart that the powers which one may acquire at college are the fundamental things in a man's work. I have not found it so. A man makes his little influence felt upon the world's history through the natural powers which come into the world with him and which are continuous, since they are handed down from one generation to another. Your study and your college work may sharpen the tool but the quality of the metal and the strength behind it come from the humbler influence and ambition which have ever been a part of the man's life. For his ambition is after all only an awakening of a desire or a power which may have slumbered through generations and passed on without development. You will see what I mean by considering the dismal and pitiful failures which are made when people start out to make a lawyer, doctor or a farmer on the principle of fitting a square peg into a round hole. And that is why the future history of this country is not to be worked out at great universities or in the large cities but back among the hills at the little school house where youthful character is developed. That is why you young men cannot influence history by your work here as you can back in the primary departments close to the springs of civilization. You can do it best by speaking as the common people and always thinking as the wise. Now for example: I lived my boyhood in a country town of New England. I know how the hill towns of that section were deserted, and I believed with others for years the easy theory, that this desertion was brought about by the tariff or by the cheap government land in the west. I was part of that history and helped make it, but not until gray came into my hair did I recognize the true reason. It was caused by the failure of the New England country schools to teach their pupils pride for their section and true vision for the future. The statesmen who built the great empire of the west and opened it for development and the soldiers who made industrial freedom possible did something to make the abandoned farms and depopulated towns, but they did not do as much as the school teachers who taught us in those little school houses. History may be framed and gilded at the state house or at the universities but the timbers are hewn and framed at the school house. You see they taught us the wrong things. Forty years ago I went out of that district school firmly believing that Cape Cod was the greatest place to go away from. I should have been taught that right at home, right under my feet, there were neglected opportunities waiting for the boy who had the courage and the vision to wash the gold out of the dirt. I cannot put it more concisely than that. We were given a few elementary facts and our minds were
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sharpened on the whet-stone of a hickory stick and I grant that it was well done. Every fact that was drilled into us, every application of a principle, was fitted to make us as children believe that a New England farm was a good place on which to be born but that opportunity and the things which could quench the thirst of the soul were only to be found in city and town. It was that idea drilled into the hearts and minds of the country boys and girls in my school days which did more to depopulate rural New England than any other agency. We were making history at those school houses and dreaming all the time that it was being made at Boston and at Washington. We made history wrong as I now view it, and ever since I realized the mistake that was made in those country towns I have grown more and more firmly to the conviction that the spiritual and human side of education is worth three times as much as the purely intellectual. Could I go back forty years in history and take with me 500 young men like you, clear-eyed and hopeful, with visions of natural opportunity and knowing what I do from 40 years of a rough and ready life, I could change the history of that time. I could rebuild the rural sections of New England, I could bring back much of the old contented farm life and I could stop much of the congestion of capital in the cities. You see the trouble was that we had millions of acres of land to give away. When men became discontented there was always a place for them to move on. The nation became like an individual who gets rid of trouble along the paths of least resistance by moving away from it. We did not build solidly and well as we should have done by hunting the improved opportunities at home, because there was always a new opportunity at a distance. The restless feeling now growing among the people is largely due to the fact that there is no more new land, and we have not been taught what to do with the old land in order to make it new. With my 500 young men I could have given spirit and vision to country schools. Do not think that I would make you superintendents of schools or high salaried state officers in order to do this. If I had the power to do it I should have sent you out among the hills like the disciples of old with your staff and your script with little thought for the morrow. Had just one such man come to our little school among the hills and started a school garden or a school fair or led us just a little way along the road to home opportunity I know that many of those boys and girls who wandered away would gladly have remained. Here is one little illustration. When I was a boy a sick man raised a tomato plant in a half barrel kept in his room. That plant actually produced fruit in February. Hundreds came to see it. Had there been one single person in that neighborhood with vision and hope to make the children see the possibilities of such work there would have been a great development of greenhouse culture. Our farmers had been taught to compare an acre in stony New England with another acre in rich and fertile Kansas with the same crops for comparison. Our farmers sneered at the tomato plant and called it a mere play-thing. The old town is now full of greenhouses. The business done in glass products is many times greater than our combined farm crop, but this trade is all in the hands of foreigners. The American youth moved away because they were not taught land possibilities. The foreigners came and stayed because in their European schools such possibilities were of necessity. You will see, therefore, what I would do with my 500 young men if I had them. They would make those boys and girls stop looking over the western hills but rather at the soil beneath their own feet. You will see, therefore, what I am getting at. This is essentially a nation of land owners. Once let there grow a disappointment with ownership of land or what comes out of the
land, and you start the growth of anarchy. There can be no permanent hope for this country except when the small free holders are contented with their homes and their business share. You must begin with the country child if you expect to make the right sort of history and you must wait 30 years in hope and patience for the result of your work. I know it is the dream of the college man or boy to do great things in the world as a teacher or scientist, as history maker, yet when brought face to face with the tremendous problem and the results which older men have lived to learn, you will realize how small after all a single man's work must be. And the outlook should not discourage any man but rather give him greater power to handle the unit which is given as his share. Many a young man on realizing this has said “What can I do? It is evident that I cannot touch or move the large affairs of life. What can I do with my little ability and with my poor slice of education?”

When the English conquered Egypt they found a nation of cowards. The Egyptians lacked the spirit to fight for their country and lacked a country to fight for. The world said that Egypt never could make an army out of those cowardly slaves, yet within a few years such an army had sprung as it were out of the sand. It was well drilled, well organized with courage to fight and power to obey. Where did it come from? The world gave credit to the great English officer at the head but he promptly denied that he was responsible. He gave credit to the petty officers or orderly sergeants. These men, unrecorded, unarmed and underpaid, had each taken his little handful of Egyptians and patiently drilled and drilled them until they were fit to be units of a great army. Now, I have learned that history does not need generals or high officials half as much as it needs orderly sergeants to drill the units of society. If you young men should come to me and say honestly “I wish to serve my country. The state has given me an education and I am under an obligation to pay for it in service. What can I do with my training, not to serve myself, but to serve my country?” I should say to that patriotic question that with such men history is secure. Forget your dreams of greatness if you have any, cut out the pleasant paths of mere study and government service. Back on father's farm or as hired man on another man's farm. Try the temper of your education on the bed rock of social needs and act there as orderly sergeant for agriculture and for God. I think our agricultural education will be top heavy until more of our college graduates can put self-denial and public service into their work. In order to do this they must go back into plain farm life and live it in such a way that they can give their neighbors spirit and vision. The country needs college men who will go out among the common people with just the spirit of missionaries who go to foreign lands.
IS IT NECESSARY TO IRRIGATE ORCHARDS IN THE EAST?

By C. S. Wilson
Professor of Pomology, Cornell University

The fruit growers of New York have heard much of late about the success of the western growers and their methods of growing fruit. Among these methods the question of irrigation has received some attention and the eastern grower is wondering, perhaps, whether or not irrigation would be practicable and profitable in New York State.

The question was brought definitely to the attention of the New York growers by Mr. Lamson at the last meeting of the Western New York Horticultural Society. Mr. Lamson gave an account of a small experiment which he carried on during the summer of 1909 in his peach orchard situated on Lake Ontario. A part of this orchard was irrigated by water pumped from the lake and a corresponding part not irrigated. The difference in results is shown in the report of the above mentioned society.¹

The statement of Mr. Lamson has left an erroneous impression and it is the purpose of this article to discuss this question briefly and fairly from the standpoint of the New York grower. The results which Mr. Lamson secured were marked, but he omitted a fundamental and influencing factor, namely, cultivation. The water was applied to an orchard which had not been tilled, a fact which accounts in a large degree for the difference in results.

The United States Weather Bureau classifies our areas into three divisions as determined by the annual amount of rainfall, arid, semi-arid, and humid. It defines an arid region as one where the annual rainfall is fifteen inches or less, a semi-arid region as one where the annual rainfall is from fifteen to thirty inches, and a humid region as one where the annual rainfall is thirty inches or more.

When we consider the rainfall in the important fruit growing sections of the country we find it is somewhat variable. During the year of 1910 it was approximately as follows: Rochester, N. Y., 32 to 34 inches; Ithaca, N. Y., 32.97 inches; Hood River, Oregon, 36 inches; Grand Junction, Colorado, 8.74 inches; Wenatchee, Washington, 15.54 inches.

If we classify these areas on the basis of the amount of annual rainfall some of them are clearly arid regions, others semi-arid, while others are humid. Most of the fruit growing sections of New York State would fall in the humid division.

From the standpoint of the fruit grower the above classification would be valueless unless the rain fell at the right season of year. The distribution, therefore, as well as the amount, is a determining factor in the question of irrigation. Considering this factor for New York State, the rainfall during May, June and July has been sufficient for the development of the fruit and fruit tree, except in rare cases. During August the lack of rainfall is serious and the grower believes irrigation would be beneficial. At this time uncultivated crops suffer most, whereas crops which have been thoroughly cultivated suffer little, if at all. Where thorough and frequent cultivation has been practiced in the spring there are no serious results and irrigation would be of no economic value. The rainfall and most orchard lands of New York State are such that if intensive and thorough cultivation were practiced to catch the rainfall, and then after having caught it to conserve it, there would be no need of additional water. The problem before the New York State grower is to utilize the rainfall to the best advantage, rather than to add more water.

As an exception to the above it is possible that our light sandy and gravelly soils, under certain conditions, may be irrigated with profit. These types of soils are naturally more affected by drought than the heavier types. Where they are located in drier situations, with sufficient water at hand and easily accessible, irrigation may be profitable.

In the report of Mr. Lamson he seems to suggest that irrigation may take the place of cultivation. On our soils irrigation can never take the place of cultivation—the two must go together in order to secure good results. For the best distribution of water through the soil it must be tilled at the time the irrigation water is applied, and in order to conserve the moisture of irrigation, cultivation must follow immediately. To irrigate our heavier soils without thorough cultivation would be injurious.

Among the disadvantages of irrigation there are two which I wish to mention and which might prove serious for New York conditions, namely, the cost of the operation and the alkali which comes to the surface. The cost of an irrigation plant is variable, according to the water supply. When the water can be brought by gravity the cost is much less than where it has to be raised by pumping. In New York State it would have to be pumped in almost every instance, which would make it an expensive operation. Moreover, there are many inland sections of New York where it would be almost impossible to get sufficient water, except at a very high cost, and for these sections irrigation surely could not be profitable.

In the case of the light volcanic ash soils of the west the water brings to the surface an alkali which is injurious to the growth of the trees. It is claimed that this alkali can be removed by washing the surface of the soil. How thoroughly this can be done has not been fully determined.
Whether the water of irrigation applied to the New York soils would bring a similar alkali to the surface is not known, but it certainly should be considered.

The economic results of irrigation have been worked out to some extent by the experiment stations of the east. The New Jersey Experiment Station worked on the problem for years, and although in some cases the irrigated product was somewhat improved, nevertheless the improvement was not sufficient to pay for the irrigation. In other cases thorough and intensive cultivation gave as good a product without the water of irrigation as with. Before considering the proposition of irrigation the fruit grower in New York State should be absolutely sure that he has utilized the rainfall to the best advantage.

OPPORTUNITIES FOR SHEEP HUSBANDRY IN VIRGINIA

By Joseph E. Wing

To write at all intelligently or fully of Virginia and the opportunities there for sheep husbandry is difficult unless one has much time and space. Virginia is a very large state and has very varied soils and climates. There are mountain valleys rich in limestone and bluegrass where mutton sheep thrive almost as they do in England, there are poorer mountain soils where nevertheless sheep make a good living and profit when rightly handled, and there are the lower, warmer lands nearer the coast not so well adapted to grazing because bluegrass is not native there, yet producing abundantly of Bermuda grass and having so mild a winter climate that sheep can there graze rye, wheat, vetches or rape nearly the whole winter through. It is on these lands that greatest chances of profit are found although shepherding there will always take greater care than on the lands of the mountains where the whole art of the shepherd at present may be little more than to count, salt, shear and sell his sheep.

Taking thought of the opportunities in Virginia for skilled shepherds, one must first take account of the cheapness of keeping sheep where the winters are so mild that little feeding is needed if the shepherd has had forethought to sow and grow rape, vetches, wheat and rye. Winter barley also affords a lot of winter grazing and perhaps after the rape is gone wheat is the best of winter grazing crops. Crimson clover, too, thrives in its altitude and on sandy soils.

While little forage aside from what may be taken direct from the soil is needed with good providence yet there must be always a small amount of dry forage at hand, this may be from the corn plant or from hay and it is now proven that alfalfa can be easily grown on any Virginia soil that is dry and that can get lime. No great amount of grain will be needed for the flock in winter though the skilled shepherd will see to it that the sheep are kept strong and in good heart, with such grazing as I have outlined a half a pound of grain a day will be ample and may be too much for even large ewes during four months of winter. This is very much less grain than is fed in northern states by careful shepherds.

The greatest profit of shepherding in Virginia comes, however, not from a too frugal method of shepherding but from use of breeds that will lamb in early winter and in feeding them well. Pre-eminent here is the Dorset. The Merino will also to some extent give lambs in early winter. When the ewe finds her lamb she will after that well repay liberal feeding of green stuff and grain. After she has her lamb she may eat a pound of grain a day, or even more, with good profit and the lamb too should be unstinted and his appetite developed as far as possible.
If there is grazing on green wheat or rye, if there is a bite of dry alfalfa hay at night, if there is an allowance of grain the ewes will be full with milk and the lambs filled. Thus very rapid and economical gains are made and the lambs are soon ready for the market. They go at first to New York, always a market paying high prices for what it wants, then later to other large eastern cities. Before the time of parasites comes, all the lambs are gone to market unless the grower has saved a few of the ewe lambs to add to his flock. Unfortunately he can scarce afford this as his lambs may net him $8.00, or even $10.00 each and have done better than that so that it is likely that the supply of ewes will be grown on the hills of West Virginia or some other parts of the upland country. The summer care of ewes is simple; they should have as frequent shift of pasture as is possible, for in all southern countries change of pasture is essential to success in sheep husbandry.

In the mountains of course a very simple and easy method is followed. There blue grass is almost the sole food of the flock the year around, a little corn, stalk and all, may be thrown out when snow is deepest or a little hay fed once a day. The expense of keeping sheep here is about half what it is in Michigan where whole counties are devoted mainly to shepherding and the profits in Virginia, under right management, are far ahead of what they average in the north.

Here are a few points of management well worth bearing in mind. During our present state of knowledge of how to manage the hateful parasite one must not overstock. A flock of 100 ewes is quite large enough and may be too large. Frequent shift of pasture during all the warm months is very helpful. A sheep free from worms will keep fat on half the feed that a sick sheep will consume, and remain starved. It is well to provide shelter from rain and to teach the ewes to use it, forcibly if one must.
Ticks must be exterminated. There is no need to dip every year if ticks are once completely banished as they may be by two careful dippings in one spring. While Dorset ewes or grade Dorset ewes well managed have greatest capacity for profit under the system outlined yet any of the Down breeds will thrive in Virginia. If ewes must be bought in another state Delaine Merinos or Rambouillets or their grades will make ideal mothers for these winter lambs and the lambs will give great profit if born from Dorset sires or from Down sires. The Longwools are out of their latitude in Virginia. A Merino ewe will live and breed much longer than any sheep of English origin.

RURAL LEADERSHIP—THE NEED FOR TECHNICAL TRAINING

By Elmer O. Fippin
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The time has arrived when a large amount of technical knowledge is requisite in anyone who would deal intelligently with agricultural problems. This may seem to be almost a trite statement in an agricultural community, but it may be well for us of the college, as well as many readers which this journal finds beyond college walls, to briefly review its need.

The production of plants and animals has been shown by the experience and investigations of the last few decades to be an exceedingly complex process involving some of the most intricate operations to be found in all the range of man’s activity. Indeed so complex, delicate, and multifarious are the operations and processes dealt with by the farmer that the understanding and systematization of the facts and principles involved have had to wait upon the development of nearly all of the other exact and applied sciences. All of these find application in the art of agriculture. Just as the modern fast train is dependent on the invention of the air-brake, and the modern newspaper is dependent on the telegraph and telephone and numerous other special advances, so the prevention of the diseases of plants is dependent upon investigations of the minute bacteria and fungi; of plant and animal improvement, upon the laws of variation, and the fixation of nitrogen and the value of a legume in soil improvement upon the chemical and bacteriological transformation of that element. Similarly the establishment of economic and efficient systems of animal feeding is dependent upon a thorough chemical knowledge of all these organic substances which enter into the composition of plants as well as the physical, chemical and biological transformations by which they become a part of the animal body. In view of these wide ramifications of the operations going on in the field, garden and orchard into nearly all branches of exact and applied science, it is not surprising that the successful farmer feels the need of understanding these processes in order that he may control them to his benefit.

The investigation of the processes and facts involved in agriculture has gone on with amazing rapidity within the last two decades. It was only about 1840 that Leibig first called attention to the applications of chemistry in agriculture, and it was not until the seventies that public experiment stations were established in this country for the investigation of farmers’ problems in a comprehensive manner. All previous effort in that direction was private in support and limited in scope. There was also no literature relating to these subjects and consequently no chance for anything but practical field experience on the part of the farmer, while the investigator of these problems was
totally in the dark as to the relationships of his problem and the best method of attack. Accordingly, early progress in such investigation was slow, often uncertain and largely confined to superficial facts. Much of the early investigation was in the nature of experimentation to get at facts of immediate value rather than at fundamental principles. But with the accumulation of data and the increase in agencies for investigation, the literature of all phases of agriculture is accumulating with amazing rapidity so that the fields of its knowledge are becoming highly specialized. Instead of departments of agriculture, as was the case in the early agricultural and mechanical colleges where one or two men covered the whole field, there are now colleges of agriculture with fifteen or twenty departments in each of which is a staff of several men and each charged with a phase of that department's work sufficient to claim all his attention, as soil bacteriology or chemistry, plant breeding, dairy manufacture, pomology, forestry and landscape art.

In order to show the need of technical training in agriculture a little further, it is well to consider briefly the knowledge a farmer should have in a few fields if he is even moderately to make use of the opportunities afforded by his situation. Crop production rests upon three fundamental factors: soil, climate, and the individuality of the plant: any one of these may be a determining factor in the resulting yield.

Considering first the soil, it is worth remembering that in the United States there are more than a thousand varieties or types of soil, each of which differs from all others in some one or more of its physical, chemical or biological properties, and that it has a distinct and individual relation to plant growth. This is seen to be recognized in nature where each situation has its peculiar vegetation. The swamp has its type of vegetation, the clay flat its type, the sand hill its type, the alkali plain its type and the chalk down its type. Similarly, there are many classes of cultivated plants and many varieties of each,—each with its peculiar requirements of soil. Lettuce thrives on muck soil, radishes on a light, warm, sandy soil, corn on a rich, dark loam or clay loam, wheat on clay, peaches on silty or sandy loam, apples on loam or clay loam, etc., with varietal peculiarities of each. Would the intelligent farmer disregard these differences and relations and expect equal success?

Fertilizers and manures of many kinds are widely used. They differ in composition, action and cost, and their value depends on the soil and the crop. Their accurate and economic selection requires the exercise of the highest intelligence on the part of the farmer.

The physical management of the soil,—tillage, the control of the moisture are similarly complicated processes related to the character and conditions of the soil, and the neglect of which may readily make the difference between success and failure. A farmer in western New York was struggling with poor crops, debt, and discouragement fifteen years ago. He decided that while his land was about as well drained as that of his neighbors it needed further artificial drainage. The installation of this was the means by which debt and discouragement were eliminated and he became recognized as a leading farmer in this state.

In a central western state the use of the Babcock milk test and the milk scale so that the amount and quality of the product of each cow was determined resulted in the reduction of the number of cows kept by this individual farmer from thirty to seven with a material increase in his net profits. The continued breeding and selection of Holstein cows on the Cornell University farm has resulted in doubling the average production per animal. It is a matter of simple calculation that to increase the egg production of each hen in New York State by one would add a half million dollars to the income of the poultry-men of that state, while it is shown
to be readily possible to make this increase by breeding and selection in connection with the trap nest, not one but ten. By proper feeding, it is demonstrated to be possible to effect a further equal increase in net returns. Intelligent seed corn selection, care and germination are eliminating the barren stalks and insure from five to twenty-five percent better stand in the field. New strains of cotton with a longer and better lint have been developed and their general adaptation, where suited, would greatly increase the returns from that crop, while selection has resulted in strains practically immune to the wilt disease, which has devastated hundreds of acres per season. The application of intelligent pruning, spraying and tillage of orchards is making fortunes out of what, in other cases, are merely a poor quality of cultivated timber with a little pasture interspersed. In one instance which came to our notice, a well-grown, neglected orchard of some seven acres has been yielding the tenant about $80.00 as a net return per year. It was taken over by a man versed in its management and by pruning and spraying was made to yield $400 net the first year, and the second season almost double that amount, and the third year the manager took first prize on Greening apples at the state fair in the leading fruit producing state east of the Mississippi river. Nine acres of muck soil yielded a net income of over $5000 per year, while other men in the same region and on similar soil have buried themselves in debt in attempting the same line of development without adequate understanding of the processes involved.

Is there need to multiply further examples of the value of technical knowledge of agriculture in the person who would be a farmer or deal in any important way with the problems of farmers? In earlier years when the bounty of the soil and its seeming unlimited extent gave a surfeit of produce with the minimum of skill, there was less specialization and less need for technical training in this line. In the future, however, the demand for produce will continue to be acute, specialization will increase and the problems of production become more difficult. Consequently, the need for special training for the different phases of agriculture will be vastly more acute and their lack will show more quickly in failure.

Further, the ability of the trained man should be applied to the largest practicable area to the benefit of not only himself, but of his associates and the nation. We expect to see a very large readjustment in the manner of conducting farm operations by which the man with the requisite knowledge and ability applies it to the maximum area of land and of capital and farm units are determined by the type of their product and not upon an outgrown trade custom. The type of business organization which in turn depends upon the type of produce of any given section is involved.

The crops of any given section rest back on the soil and climate and to some extent on the market facilities so that the development of the productive capacity of any region must take account of the crops it is best suited to produce. This will give dairy farming in one region, fruit in another, nursery stock in one region and potatoes in another, while in other regions grain or cotton or some specialty will dominate, as the violet production in northwestern Dutchess county, New York.

The means of acquiring this knowledge involves both research and education. Facts and principles must first be discovered before they can be applied and certainly in all phases of agriculture, there is yet much to be learned. Next, the facilities for agricultural teaching must be greatly expanded to more clearly meet the needs of the people. There must be great growth in the Colleges of Agriculture, and secondary schools of agriculture, and extension agencies in the same line must be greatly increased.

To see the bearing of all these factors on rural life and welfare is the
part of the social worker and the statesman as well as of each intelligent farmer. No student should go out from a college of agriculture without having a somewhat definite appreciation of these relationships of discovery, teaching facilities in school and college, trained executive capacity on the farm and the national social system. The rural adviser should have such an appreciation of the fundamentals of agriculture as will enable him to give wise direction as well as stimulate greater interest in and sympathy with the operations on the farm for pecuniary benefit as well as enjoyment of the things nature gives free to the intelligent observer.

Excepting perhaps moral integrity and deep spiritual insight, technical training in the science and arts of agriculture is the most fundamental need on the farm today. Nor is this need confined to the country, for the city dweller needs to appreciate its facts in order that he may intelligently cooperate with the farmer, as he must needs do as a part of the general social structure. There cannot be too much education of the right sort.
THE FOURTH ANNUAL FARMERS' WEEK

EDITOR'S NOTE.—In this article we attempt to give a brief summary of some of the good things which our Farmers' Week guests will find here.

Once more Farmers' Week is approaching and the various committees are arranging to receive the visitors from all over the state. It is to take place at the College from February 20 to February 25. Circulars descriptive of the events which are to take place during the week are now being sent to the farmers throughout the state and indications point to a record attendance. The program will consist of lectures, discussions and actual judging and handling farm products and animals.

A special feature of the week is the annual Public Speaking Contest for the $100 Eastman prize for students in the College of Agriculture. This will take place on Friday evening and at the same time Dean Bailey will deliver the closing address of the week.

In the following columns is printed a statement by the head of each Department of the special features to be held during the week.

THE DEPARTMENT OF HORTICULTURE

The Department of Horticulture will provide lectures on flower culture, vegetable culture and subtropical horticulture during Farmers' Week. In addition demonstrations will be conducted illustrating the practical features of floriculture and vegetable culture. Among the lectures already arranged are the following:

- Opportunities in Commercial Floriculture, Patrick O'Mara, Manager Peter Henderson & Co., New York City.
- Growing Choicest Horticultural Products, W. C. Barry, President Western New York Horticultural Society, Rochester.
- Nut Culture, North and South, (illustrated), Professor John Craig.
- Greenhouse Management, Chauncey West, Irondequoit.
- Irrigation Experience, Dell Titus, Irondequoit.
- Celery on Muck Lands and Lettuce on Muck Lands (2), W. L. Bonney, Batavia.
- Evening Lecture, (illustrated) H. B. Fullerton, Medford.

THE DEPARTMENT OF FARM CROPS AND FARM MANAGEMENT

During the week there will be the Corn Show together with lectures and demonstrations on corn growing. Corn from various parts of the State will be exhibited as will also corn grown from the exhibits of two years ago. From these exhibits fifty varieties were selected for variety tests. The poorer ones have been eliminated and the progeny of the ones that have shown up best will be exhibited.

Methods of farm accounting will be discussed and time will be given for personal interviews with those farmers who wish to undertake the work.

Results of the agricultural survey work will be shown. From this work the types of farming that are successful stand out quite clearly as do many principles of successful farm management. One part of this will be a discussion of the importance of cash crops on the dairy farm as shown by the types of farming on the most profitable dairy farms.

Time will also be given for discussion of the place of agriculture in the public high school.

THE DEPARTMENT OF POMOLOGY

The Department of Pomology will hold a packing school for box apples during Farmers' Week. A series of lectures covering the theory and practice of packing will be given in the forenoons, and laboratory practice in the afternoons. The laboratory work will consist of the
actual practice of wrapping and packing apples.

The course is open to everyone. Inasmuch as the laboratory facilities are limited, it will be necessary to register in advance for the work. Those who wish the course are requested to send their names to the Department at once.

THE DEPARTMENT OF SOIL TECHNOLOGY

The following lectures, or as many as seem practicable to include, will be given. The dates may be subject to change in one or two cases:

LECTURES BY E. O. FIPPIN

Philosophy of Tillage, February 20 or 25.
Drainage Convention, February 21, all day.
Mixing of Fertilizers and Calculations of Trade Value, February 23.
Lime in Relation to Soil Improvement, February 24.
The outline of the Drainage program, so far as it is available to date, follows:

PROGRAM FOR DRAINAGE CONVENTION
10:00-12:30 A.M.
President's Address...E. O. Fippin
Drainage in Northern New York, H. E. Cook, Canton, N. Y.
Precautions to be Observed in Draining Clay Land, H. E. Cox, Geneseo, N. Y.
The Use of Silt Wells in Land Drainage, G. Wendell Bush, Arden, N. Y.
The Admission of Surface Waters to Drains, I. C. H. Cook, Batavia, N.Y.
The Drainage and Utilization of Muck Land.

2:00-4:00 P.M.
Announcement of results of J. D. S. Findlay prize drainage reports and reading of the prize report, presentation of cup, etc.
Ditching Machines, Their Types and Practicability, C. H. White, Ionia, N. Y.

4:00 P.M.
Business Session.

8:00 P.M.
The Practicability of Irrigation in the Eastern States, Mr. Warren, U. S. D. A.
State Aid in Farm Drainage, Prof. W. H. Day, Ont., Can.

DEMONSTRATIONS

1. Drainage.
a. Types of tile.
b. Drainage model. Sections in operation.
c. Drainage model plot.
d. Porosity of soft tile.
e. Maps of farm drainage systems.—T. E. Martin, R. E. Chapin.

2. Soil Moisture.
b. Effect of packing on water capacity of soil.
c. Efficiency of different mulches.

a. Exhibit of good muck soil, showing average composition.
b. Charts showing fertilizer results on onions.

4. Fertilizers.
a. Samples in jars.
c. Effect of fertilizers on timothy hay. University farm.
In jars.
d. Effect of manure on corn. In jars.
e. Effect of lime on good Volusia silt loam. Wire baskets.

5. Effect of Legumes on Composition of Non-legumes.
6. Charts.
   a. Waste of manure.
   b. Reinforcement of manure.
   c. Principles of soil management.
   d. Agricultural conditions in New York.
   e. Soil maps in New York State.

DEPARTMENT OF ANIMAL HUSBANDRY

In addition to the usual features of this Week the Animal Husbandry Department is planning to do some extra demonstration and lecture work. During the Week, every afternoon will be taken up by different demonstrations in the Judging Pavilion with horses, sheep and cattle. Among other features will be a cattle Judging Contest, Horse Show, carcass demonstration of fat steers, hot house lamb exhibition and a public sale of livestock to be held, Friday, Feb. 24th. Throughout the Week there will be registered horses, cattle, sheep and swine on exhibition in the College barns.

In addition to the lectures given by the College Faculty, several prominent breeders and stockmen of this and other States have been invited to speak on the different phases of Animal Husbandry. Two evening sessions will be devoted especially to livestock interests. One of these will be held in the Main Auditorium where an address will be given by a man of National fame as a practical breeder and educator. The other evening will be devoted to a Round Table and an informal discussion.

DEPARTMENT OF PLANT PATHOLOGY

The Department of Plant Pathology has arranged for two lectures and three demonstrations to be given during Farmers' Week. Both lectures will be given by Prof. Whetzel, the subject of one being “Lime Sulphur as a substitute for Bordeaux for Summer Spraying,” and the other, “The Theory of Spraying.” Both lectures will be of immediate interest to farmers, the former particularly to orchardists as the Lime Sulphur solution has proved, in the experiments conducted by the Department for the past two years, to be an efficient fungicide for the control of Apple Scab and Peach Leaf Curl. Also if farmers knew more of the theory of spraying they would be better able to judge when and how to spray.

The three demonstrations will practically be laboratory work as specimens of the diseased plants studied will be laid before those attending and a chance will be given all to examine with a microscope the diseased tissues and the causal organism. The development of the fungus within the tissues of the host will be explained carefully and the best method of preventing the disease will be pointed out. The diseases to be considered in these demonstrations are: (1) The Early and Late Blight of Potatoes; (2) Apple Scab; (3) The Grain Smuts.

DEPARTMENT OF FARM MECHANICS

Professor Riley is fitting up the west end of the laboratory for a practical system for doing household work and domestic work all by one engine. This will run a dynamo for running the washing machine, furnishing light and heat; it will also run the pump and compressor to furnish the water supply by the “Leader System.” The electrical apparatus has been supplied by the Davis-Brown Electrical Co., of Ithaca, N. Y., and the Electrical Storage Battery Co., of New York City.

DEPARTMENT OF PLANT BREEDING

The Department of Plant-Breeding is making extensive plans for Farmers' Week. Many lectures will be given by members of the department and an extensive exhibit is being arranged. This exhibit will first be shown at Columbus, Ohio, in connection with the National Corn Exposition. The New York Plant Breeders’ Association, of which Prof. Gilbert is secretary will meet here during Farmers’ Week. Dr. Gilbert is arranging a very interesting program for that meeting.
Hon. W. M. Hays, assistant secretary of agriculture at Washington will be present and deliver a lecture on the Organization of Breeding. Other eminent plant breeders who are expected to speak are: Prof. Corbett of U. S. Dept. Agr., Washington, D. C.; Dr. Morris, New York City; Prof. Hedrick, of the Geneva Experiment Station; Mr. T. E. Martin, Syracuse; Mr. Burt Olney, Oneida; Mr. Samuel Fraser, Geneseo; Herbert King, Trumansburg; Geo. R. Schauber, Balserton Lake; J. F. Eastman, Morrisville, and others.

DEPARTMENT OF POULTRY HUSBANDRY

Professor Rice announces a Poultry Institute during Farmers' Week. Numerous picking contests and judging contests will also be held. The names of the outside speakers are not known but Professor Rice promises that there will be something doing all the week.

THE DEPARTMENT OF HOME ECONOMICS

The Homemakers' Conference is a part of Farmers' Week which furnishes a program for woman's work on the farm and in the home. About six courses of lectures have been planned for the coming Farmers' Week. The conference is officered by women of the state and the meetings are partly in the form of conferences and partly lectures given by the instructors in the College. One course will be given upon Human Nutrition by Miss Flora Rose, another upon House Planning and Decorating by Mrs. Helen Binkerd Young, another on Household Management by Miss Martha Van Rensselaer. Professor Howard Riley is to give a course upon household sanitation illustrating water supply, sewage disposal, mechanical power for the house, house lighting and heating. Mechanical devices for running household labor savers will be shown. It is expected to have a course of lectures upon Appreciation of Art in the Home. These lectures will be upon music, pictures, books and growing plants.

The work of the students in Domestic Science and Domestic Art will be upon exhibition and various exhibits will be prepared illustrating principles in domestic economy.

SOME IMPRESSIONS OF THE INTERNATIONAL

By F. W. Bell, '11

The International Horse Show was held in the International Amphitheatre at Chicago, November 22nd-26th, followed by the International Live Stock Exposition, November 26th-December 3rd. The Horse Show consists of the lighter breeds of horses, the saddlers, hackneys, heavy harness horses, roadsters, officers' chargers, hunters, jumpers and ponies. The Live Stock Show consists of draft horses, beef cattle, sheep and swine. The Amphitheatre has a seating capacity of over four thousand, the seats surrounding a large oval tan-bark ring. Connected with the Amphitheatre, are stabling quarters, covering several acres of floor space. Exhibitors were there from all parts of the United States, as well as many from Canada. Daily and again until late in the evening, exhibition and judging was going on in the ring.

This was the third Harness and Saddle Horse Show held under the auspices of the International Association. The show is similar to the New York Horse Show held annually at Madison Square Garden and the entries were largely of animals that were at the New York Horse Show, which was held the week previous. In the classes for horses in harness, Judge W. H. Moore of New York City and the Fairmont Farms, (the property of C. W. Watson), Fairmont, West Virginia, were the most prominent exhibitors, showing numerous entries of exceptional merit. There were several other exhibitors, but the two mentioned carried off most of the blue and red ribbons.
The five-gaited saddlers with their beauty, elegant bearing and brilliant action presented a wonderful sight. No one, be he a lover of the horse or not, can help but be thrilled by such an exhibition as was presented by these beautiful, intelligent animals. In the three-gaited saddle horse classes, two distinct types were shown; one the American saddler and the other the English thoroughbred. In the International events for officers' charge were representatives from the armies of the United States, England, France and Holland, ridden by the officers in uniform. These classes consisted of high jumping, broad jumping, hurdling and various military tactics. The classes for hunters and jumpers assumed an international character as the best entries were the officers' mounts.

Two teams of five men each, representing the State University of Kentucky and the University of Missouri, competed in the Student Judging Contest for the silver trophy offered by the American Saddle Horse Breeders' Association, for judging registered saddle horses. The cup was won by Missouri with a total score of 1378, Kentucky making 1311 points.

The eleventh International Live Stock Exposition marks another long stride in the steady advancement of this great show. Until late every day...
Throughout the show the judges were at work on the various classes of draft horses, beef cattle, sheep and swine and the final ribbons were not placed until the last day. Only those who saw it can realize the enormous proportions that this show has reached. Throughout all the breeds of live stock, large classes were the rule. For instance, in the Percheron two year old stallion class, seventy-seven horses were brought into the ring. In number of entries the Percherons were closely followed by the Belgians, Shires and Clydesdales in the order given.

Many of the rings were so large and the animals of such uniformly high quality, that it required a large part of the forenoon or afternoon to place the ribbons on a single class. Among the breeding beef cattle the classes of Shorthorns, Aberdeen Angus and Herefords were uniformly large, the Galloways and Polled Durhams being fewer in numbers. There was a good show of Red Polls. In the single steer classes the college entries were very prominent both in numbers and in winnings. The grade Angus exhibited by the Iowa State College was Grand Champion. Reserve Champion went to the Champion Short Horn steer, a roan owned by James Leask, Greenbank, Ontario. The Grand Champion steer was ten months old and weighed eleven hundred pounds. He sold for sixty cents per pound, or six hundred and sixty dollars. This is the second highest price ever paid for the Champion steer, the Champion of the first International bringing $1.50 per pound. This was an Angus year, the Grand Champion carload lot and the Champion carcass also being of this breed.

All the breeds of sheep were represented by large entries, especially the breeding classes and cross-breds, the fat classes not being so well filled, as a rule. The Grand Champion Wether was a Southdown and the Reserve Champion a Hampshire. The swine exhibit was hardly as large as might be expected, but the quality was very good.
The International offers unequaled opportunities to the college student to become acquainted with the various breeds of beef cattle, horses, sheep and swine, for here we find the very best animals of the country. The students of the western colleges attend in large numbers, but because of the greater distance comparatively few eastern students go. The show really offers more instruction to the eastern man than to the western, for the latter are in the very breeding centers of beef cattle and horses, while in the east the student is handicapped along these lines because of a scarcity of these breeds, particularly of beef cattle, in this section of the country. For any one who is interested enough along these lines, I know of no better investment of time and money than can be made by attending the International.

Every evening during the Live Stock Show an exhibition and judging program was carried out. The six horse draft teams of Morris & Company, Swift & Company and J. Crouch & Son were exhibited and put through their stunts. These big, powerful horses showed much training and skill on the part of their drivers. There were also parades of beef cattle and of draft horses. An event that excited much interest was an equine push ball contest. Teams of five riders each, one composed of the members of the Chicago Live Stock Exchange and the other of members of the Traders' Live Stock Exchange, took part. A large leather inflated ball six feet in diameter was used. For excitement the contest easily rivaled a football game.

The Student Live Stock Judging Contest was won by the team representing the University of Missouri. The other teams placed in the following order: University of Nebraska, Iowa State College, Texas Agricultural College, Manitoba Agricultural College, Ohio State University, Ontario Agricultural College, Kansas State Agricultural College, State University of Kentucky. The teams were composed of five students each, and judged draft horses, beef cattle, sheep and swine. Missouri won four of the Armour Scholarships of two hundred and fifty dollars each, and Texas one.

GRAND CHAMPION BARROW AT INTERNATIONAL LIVE STOCK EXPOSITION, 1910. BERKSHIRE, MATCHLESS BARON 8TH. OWNED BY SHEFFIELD FARM, GLENDALE, OHIO.
Photo by R. F. Hildebrand
A CORRECTION

In the printing of our December issue a bad error was made and the CORNELL COUNTRYMAN wishes here to rectify the mistake. The above engraving, which, as you know, was used on the cover of our December issue, is of a Guernsey cow, France 3rd, 3018 P. S.—Imported La Belle France, 14454 A. G. C. C. Instead of this name being printed after “Cover Design” in our December Contents it was placed under a meaningless scene which we had used for “Contents Design.” We wish our readers to observe the mistake and its correction.

It was only through the courtesy of Mr. J. L. Hope of Madison, N. J., that we were able to secure this handsome engraving and the CORNELL COUNTRYMAN regrets exceedingly the error that resulted.
The Cornell Countryman

S. G. Judd, Editor

W. G. Stephenson - Alumni Notes Editor
W. H. Fries
D. G. Woolf
A. H. White
M. H. McClew
C. F. Ribsam
G. M. Butler
B. P. Jones
W. De S. Wilson

January, 1911

A Department of Forestry

The Cornell Countryman was especially pleased to hear the announcement that the College of Agriculture would next year include a Department of Forestry. Since the State College of Forestry was discontinued in 1903 no instruction in this subject so vital to our welfare has been given in New York State.

The forests form a large part of the wealth of the Empire State but without better methods of forestry they will soon cease to be a source of income. As natural reservoirs of our water supply their value is inestimable. Our rivers and streams which in the spring are swollen torrents dwindling to muddy rivulets in the summer are only too evident reminders of forest mismanagement. Anyone who has tramped through the Adirondacks even though inexperienced, can observe the crying need of more intelligent and economical methods of lumbering. Almost every year forest fires destroy an enormous amount of valuable timber. As a recreation ground for our people the forests of the Adirondack and Catskill Mountains are a most valuable asset.

The State Forest Fish and Game Commission has worked earnestly to solve these problems, but has encountered prejudice and opposition. What is needed is education of the mass of the people in the principles of conservation. This we believe a Department of Forestry in the College of Agriculture will do much to accomplish. When the people stand united for conservation the future of the forests is assured.

The Countryman was still further gratified that the man selected to head this new Department was a Cornell man, one who has made decidedly good in forestry, his chosen field of work. We are speaking of Walter Mulford, '99, who is now Junior Professor of Forestry at the University of Michigan. The Cornell Countryman extends to Professor Mulford its heartiest congratulations and offers its cooperation in whatever work he undertakes at Cornell.

The Students' Association

Two years ago during Farmers' Week the Students' Association was formed, including every person who had attended or was attending this College of Agriculture. An enthusiastic reunion was held during Farmers' Week last year. The announcement of the annual reunion and election of officers for 1911 is found in another part of this issue. We urge all former students to make their plans now so that the week of February 20–25th, will find them at Cornell, revisiting familiar places, renewing old friendships and making innumerable new acquaintances.
It seems to us that the Students' Association has a wonderful opportunity to help this institution. Every student that goes out from this College and makes good, and we feel that most of them do, is a living advertisement of its teaching. But further, it is the duty of every member of this Association to tell their neighbors about Cornell, to give them the benefit of the knowledge they have obtained here, and to try each year to send some young person to Cornell for a course of study. In this way the characters of our student body will be kept up to a high standard. It is also your duty to do what you can legitimately to mold public sentiment so that the College of Agriculture can develop in proportion to the demands made upon it.

The Cornell Countryman is the official organ of this Students' Association. Keeping in touch with each other is by no means the least benefit received from this organization. This result we try to accomplish through our “Former Students” columns. In this department your cooperation is imperative. Send us a note every now and then as to where you are and what you are doing. If you have some good stock, some big corn or some fine buildings, mail us a few photographs. We are eager to do our part.

Again, we urge all former students to come back for Farmers' Week. The Cornell Countryman is waiting to welcome you.

One of the articles in this issue is “Some Impressions from the International” by F. W. Bell, '11, one of the two Cornell students who attended the International Live Stock Exposition recently held at Chicago. In his article Mr. Bell states that this trip is well worth the necessary expenditure and urges every student specializing in animal husbandry to visit this Exposition. The Countryman agrees thoroughly with Mr. Bell. Nowhere else in the United States can a person see so much good livestock; also, as Mr. Bell argues, animals of meat-producing type can be studied, an opportunity rarely afforded to students in the East.

We feel that the educational possibilities in a trip to the International should be clearly and emphatically pointed out to the student body. The Cornell Countryman would like to see a large excursion leave this college for Chicago each year at the time of the International.
CAMPUS NOTES

The Craig Horticultural Club composed of members of the Short Course in Horticulture, elected at its first meeting the following officers: President, Mr. Lawrence Howard; vice-president, Mr. Geo. Browne; secretary, Miss Burgett; treasurer, Mr. C. Hitchings. The next meeting of the club was held in Room 292 of the Agricultural College on Tuesday, Dec. 20, at 8'clock.

Professor Wilson of the Department of Horticulture spoke on "Fruit Growing in the North West." The lecture was illustrated by slides of the western orchards. The club was especially fortunate in securing Professor Wilson for this subject, as he has recently been in the west investigating their methods of orcharding.

The Ag. Soccer team elected W. deS. Wilson, captain, and M. B. Goff, manager, for next year.

At the meeting of the Round-Up on Dec. 21, Mr. W. R. Dunlop of Fayetteville, N. Y., gave a very instructive talk on the development of the more important strains of Guernsey cattle. Mr. Dunlop's intimate association with Guernsey's has given him a familiarity possessed by but few.

Mr. R. E. Deuel and F. W. Bell attended the third National Horse Show and the Eleventh International Live Stock Show held at Chicago, Nov. 22 to Dec. 3. These two livestock shows are considered the climax of the season and as an educational exhibit of live-stock are unexcelled by any other in the world.

In a statement on December 9, Dean Bailey showed that the Winter Courses draw not only men directly from the farm, but also persons who are expecting to fit themselves for agricultural work. Some are graduates of other institutions.

Among the winter course students this year, there are sixteen college graduates, nine of them holding the degree of A. B., two the degree of Ph. B., and B.S., and one in M. E. and LL.B. Of these graduates two are from Arts and Sciences and one from Sibley in Cornell University, and one each from Yale, University of Chicago, Syracuse, Hamilton, Rochester, New York University, Lake Forest, Fordham, DePauw and Elmira College. Of the sixteen, one is in Dairying, two in Poultry, three in Home Economics, and five each in Horticulture and General Agriculture.

The Dean further stated that up to Dec. 8, the total number of registrants in the winter-courses was 470, and the total number of students registered in the College of Agriculture was 1253.

After organizing with J. D. Nickerson, as temporary chairman, the Stone Winter Course club has elected the following officers: President, Lewis Peck; first vice-president, H. C. Yale; second vice-president, Miss May K. Gordon; secretary, G. C. Kenyon; treasurer, J. D. Nickerson. Considerable enthusiasm was manifested in Music, Debate, and Basket-
ball and all these lines are expected to make this the best Stone Club in the history of the College.

On Monday evening, Dec. 12, the Winter Course Poultry Students effected the organization of the 1911 Cornell Poultry Club of 57 members. Judging by the marked enthusiasm and good fellowship shown, it bids fair to become the liveliest Winter Course Club yet organized. Supt. Krum of the Poultry Plant was the speaker of the evening. Meetings are held every Monday evening in the Poultry Lecture room where a piano has been installed. A lively program is arranged each week. An entertainment, debates, practical talks by practical men, and refreshments are some of the features of these meetings. The officers are: John S. Wright, president; Jesse F. Hadley, vice-president; Mrs. Beulah H. Tompers, secretary; John F. Shepherd, treasurer; G. Fred Poggi, representative to The Cornell Countryman.

The Department of Animal Husbandry has at the present time forty-five men in the field supervising Advance Registry Records of dairy cattle. This affords an excellent opportunity for a young man to obtain practical knowledge of the methods of conducting dairy farms.

Professor Gilbert delivered a lecture at Bainbridge on the 15th at the Farmers' Institute School.

Dr. Webber spoke recently at the meeting of the New England Corn Exposition.

Professor Stocking, Miss Browning and Mr. Troy, all of Cornell, spoke at the State Dairymen's Association Meeting.

In the first game of the season, Ags defeated Vets in basketball by the score of 31-12.

Professor Davenport, Dean of the Agricultural College at the University of Illinois, addressed the undergraduates of the College of Agriculture on Nov. 21. After relating an amusing incident of the undergraduate life of
Dean Bailey, Mr. Davenport spoke briefly of the lack of cooperation among farmers in the Mississippi Valley, also of the wonderful improvement in Agriculture in the East during the last few years.

The incident concerning Dean Bailey was as follows: When the Dean was a freshman at the college of which Professor Davenport was an instructor of English, the latter had the class write a composition. He threw away all except one which he took to some of the head professors in English. One of them said, "The person that wrote that composition will either become a great man or will never amount to anything." The signature on the composition was L. H. Bailey.

In Professor Davenport's party, there were eight members including professors of the University and farmers of the state, on a tour of inspection of Agricultural Colleges to gather ideas for improvements to their own University.

Many of the professors of the College took part in the twelfth annual meeting of the Normal Institute held at the Experimental Station in Geneva, N. Y., during the week of Nov. 21. Dean Bailey delivered the opening address on Nov. 21, and he was followed by Professor H. H. Wing, who spoke on "Cow Testing Associations and Herb Improvement." In the evening, Director V. A. Moore of the Veterinary College spoke on "The Control of Tuberculosis" and Professor W. A. Stocking delivered an address on "Farm Sanitation and Sanitary Milk." On Wednesday, Nov. 23, Professor J. E. Rice led a discussion on poultry topics, while Professor G. W. Cavanaugh spoke on "Agricultural Chemistry." At the closing session Dr. Webber spoke on plant breeding, while Miss Martha Van Rensselaer talked on "Institute Work for Women."


At a "Get Wise" meeting for the short-course men on Nov. 30, the following program was followed: Opening address by Professor J. L. Stone. Selections by the Ag. Glee Club. S. G. Judd, '11, on "The Cornell Countryman." E. M. Tuttle on "The Clubs and Societies in the Agricultural College." Miss C. W. Browning, '12, on "The Organizations and Girl's Clubs," and a representative of C. U. C. A., J. E. Elder, '11, on the work done by that organization.

At the fifth annual meeting of the Ontario County Fruit Growers' Association held in Canandaigua, Thursday, Dec. 8, Professor C. S. Wilson spoke on "The Discussion of Small Fruits."

Professor Wilson also represented Cornell at the annual meeting of the New York State Fruit Growers' Association, held in Rochester on Jan. 4, 5, and 6. He spoke on the subject of packing apples. Many students from Cornell attended this meeting.

Agriculture has the lead in the inter-college rivalry this year, leading M. E. by three points.

The C. U. C. A. gave a social on Dec. 3 to the short-course students in agriculture. F. H. Branin, '11, rendered several violin solos; C. S. Prescott, '13, did some stunts, and G. C. May, '11, played the piano.

Dr. George M. Gould spoke before the short-course men on Dec. 6, on the subject, "The Relation of the Farmers' House to his Health."

Dean L. H. Bailey attended the meeting of the New York Commission on Distribution of Population at New York City on Dec. 6.

The following Honor System Committee has been appointed in the College: C. F. Ribsam, '11, chairman;
Miss G. S. Bennett, '11; W. C. Funk, '11; Miss C. W. Browning, '12; Harry Embleton, '12; L. W. Kephart, '13; J. P. Sanderson, '14.

The Agricultural Directory giving the names, addresses, courses, and classes of all Ag. students, is now out.

The Seniors in Agriculture held their annual dinner Monday, Dec. 19, at the college. S. G. Judd, '11, was the toastmaster; and addresses were delivered by Dean Bailey; Secretary Mann, J. C. Jagger, '11, and Miss Elizabeth Genung.

An important action was taken by the Trustees when they decided to charge tuition to all Ag. students entering the College from outside the State of New York beginning with Sept., 1911.

An agricultural school, really a branch of Cornell, is being established at Riverhead, Long Island. It will be called the Long Island Winter School of Agriculture, and will open on January 16, with Cornell instructors in charge.

A meeting of competitors for the Eastman Debate Stage, which will take place during Farmers' Week, was held on Friday, December 16.

An important action of the trustees held on Saturday, Dec. 19, at the Cornell Medical College of New York City, decided to take ten acres from the eastern end of Alumni Field for the extension of the Agricultural buildings and to replace it by ten acres in another part of the field near the University. This is admitted by all to be best for the interests of both athletics and the College of Agriculture. At the same meeting, Walter Mulford, now junior professor of Forestry, in the University of Michigan, was appointed professor of the new chair of Forestry to be instituted at Cornell.

The Cornell University Poultry Association held its first meeting since the coming of the Short Course men, Wednesday evening, Dec. 7th. The program was rendered in the Dairy lecture room and was started with two musical numbers by a male quartet. Prof. Rice then gave a very interesting lantern slide talk upon his experiences visiting various Experiment Stations and farms, and incidentally talked upon the early history of the Poultry Industry in this country. This talk was followed by some remarks from Mr. Hurd in regard to the debating interests of the Short Course men. After a few words from Mr. Benjamin, explaining the Association's work, the meeting was adjourned to the Poultry Laboratory for music and refreshments. The attendance was about 90 and the interest shown speaks well for the Association's future outlook.

**GENERAL AGRICULTURAL NEWS**

According to the November number of *American Forestry*, the damage caused by the forest fires of the past season is estimated in round numbers at from $175,000,000 to $200,000,000. The timber consumed, or damaged beyond hope of utilization before it becomes a total loss by decay, amounts to about eighty billion feet. It would take six years' growth of all the forests in the country to replace the supply wiped out by this year's forest fires. Private owners suffered more severely than the government. A comparison of the public losses with the private losses for the whole country indicates that the public losses were only about one-seventh as great as the private losses although the public forests were more than five times greater in extent.

In regard to fire protection, Forester Henry S. Graves, of the U. S. Dept. of Agriculture, offers some suggestions. According to Forester Graves, the forest protective force is entirely inadequate. The first thing required is an extensive system of trails, fire lines, and telephone lines. The fundamental principle in fire protection is, he states, that there must be an efficient organization to prevent the starting of
fires and not merely to put them out. There is no doubt that forest fires can be controlled if only the forestry service be supplied with efficient means of communication and with ample patrol force. The expense of such control would be insignificant as compared with the saving both in life and in property.

* * *

A subject of interest to all horticulturists is the cultivation of apple orchards. The Geneva Experimental Station recently conducted an experiment in a Monroe County apple orchard in which cultivation gave the best results. Now we hear from Mr. Grant Hitchings, an orchardist in Onondaga County, who has data which seems to completely controvert the findings of the Geneva Station. The cultural methods employed by Mr. Hitchings are surprisingly simple. The sod is not turned over and when the grass is cut it is allowed to lie undisturbed, thus making a mulch around the trees and adding a large amount of humus to the soil. Kentucky blue grass and orchard grass are used. The trees are protected from mice by a fine meshed wire netting and are not troubled by borers. It is an interesting fact that a small strip under cultivation cannot compare with the rest of the orchard, either in the production or the health of the trees. The results of the sod method are wonderfully successful, a large amount of high grade fruit being shipped every year. The trees are not pruned to any great extent, and so they are branched low, with the fruit easy of access. Many of the apple growers in Western New York would be better off if they followed this method both on account of the good crops and the minimized labor. The thing for the grower to do, however, is to find out just what his local conditions are, before he makes his decision.

A new departure is being inaugurated at Columbia University. Agriculture as a study subject has begun to be in demand, and a series of sixteen lectures was started late in November and will continue till spring. Among the lecturers are such men as Dean Bailey, George T. Powell, a noted fruit grower from this state, Professor Milton Whitney, chief of the Bureau of Soils at Washington, and many others equally prominent in their special branches of agricultural work. The course consists in an animal industry series, a poultry series, and other subjects of agricultural interest. The instruction will be of the most practical nature and is intended not only for those who are directly engaged in farm operations, but also for those who are interested in agricultural conditions and problems of rural economy.

A bulletin has recently been issued by the Illinois Experimental Station concerning the relative economy of round and rectangular dairy barns. The result of the discussion seemed to be entirely in favor of the circular barns. In the matter of economy of first cost the round structure is far superior, being about thirty to forty per cent. cheaper than a rectangular barn of the same capacity. The silo is in the center thus equalizing the distance of carrying the silage. The hay and straw in the loft above are easily accessible. The loft, by the way, has the decided advantage of having no obstructions, as the roof is self-supporting. The cows themselves are placed in circular rows, concentric with the sides of the barn. This utilizes space to the utmost extent as cows are wedge shaped when lying down. The few disadvantages are entirely offset by the greater strength, cheapness and efficiency of the round barn.

According to Secretary Wilson’s last annual report the retail price of beef, taking the country as a whole has recently been 38% higher than the wholesale price received by the great slaughter houses and there is also a division between these establishments and the feeders of the cattle. Last June in 78 cities the farmer
received about 55% of what the consumer paid for milk and poultry. The remedy for this absurd disappearance of value between producer and consumers lies, Mr. Wilson thinks, within easy reach. "Why do not consumers buy direct from farmers?" he asked. "A distribution of your products in this simple way has already begun in England, where co-operative organization of farmers are selling by direct consignment to cooperative organizations of consumers in cities. Farmers cooperative selling associations are numerous in this country, but co-operative buying associations among the people of cities and towns are few. It is apparent, therefore, that the consumer has much to do to work out his own salvation."

"No tuberculosis in New York State in 1920." This is the watchword of the great campaign now being carried on in this state against this dread disease. As a preliminary step the 1915 program is "No uncare for tuberculosis." In the past, the work has been largely educational, now active measures are being taken in stamping out tuberculosis and preventing its further spread. An eminent authority believes that in the next two decades, at least half of the sickness and mortality can be prevented. The campaign is now becoming more localized, counties and cities are taking it up.

FORMER STUDENTS

'89, B. S. A.—Hoxie W. Smith is superintendent of the western bottling branches of Borden's Condensed Milk Company. His address is Genoa Junction, Wis.

'96, W. A.—Elsewhere in this issue is published a picture of some corn raised on the farm of R. M. Stone & Son, at Marcellus, N. Y. Mr. Stone writes that the man standing behind the machine is 6 ft. 2 in. The corn is Eureka with some flint corn mixed to furnish a bit more grain. We also received a photograph of Shelter Valley Genie Segis No. 71734 which was exhibited by Mr. Stone at the State Fair and which secured third place in a class of 22. He was sold at the age of six months at the fair for $200.00

'02 M. S. in Agr.—C. K. McClelland writes from Prescott, Arkansas, where he is "trying to dig a living out of an old, thin, run-down farm." After leaving Ithaca, Mr. McClelland spent four years at the North Carolina A. & M. College in teaching Agronomy. He then spent one year in the Office of Farm Management of the U. S. Department of Agriculture. For three years following he was in Kansas at the Hays Branch Station, and from there he went to his present farm. Since leaving the university, Mr. McClelland has been married and boasts of a two-year old daughter "of whom we think worlds." His letter indicates a spirit of buoyancy and determination which spells success.

'05, B. S. A.—H. W. Hochbaum, Department of Agricultural Education, State Normal School, Greeley, Colorado, has recently issued an interesting bulletin on agriculture and nature-study for rural schools. Mr. Hochbaum is teaching agriculture, nature-study and rural sociology, together with some landscape gardening. He has charge of the maintenance and improvement of a forty acre Campus together with the greenhouses. He is instructing each year about 200 children in school gardening. He seems to be making good.

'05, W. P.—Mr. Chas. Louis Opperman was married to Miss Edna Barrows on December 19th, at Berwyn, Md.

'06, B. S. A.—Percy L. Lyford is forester for the Riordon Paper Company of Montreal at St. Jovite Station, Province of Quebec, Canada.

'06, B. S. A.—W. G. Brierly is at present instructing in Horticulture at the Washington Agricultural College at Pullman, Wash. He is making a specialty of the packing of apples.
'06, B. S. A.—The Countryman is in receipt of a very interesting letter from Prof. H. F. Button who is Director of the Manassas Agricultural High School at Manassas, Va. The letter is accompanied by a newspaper article written by Prof. Button explaining the work being done at the school. It shows that many of the principles of agriculture such as grafting, preparation of spray mixtures, testing of milk and other dairy products, are being taught to the students. For the girls there is a course in Home Economics. This winter from Jan. 2 to Feb. 15, there is to be a Short Course.

'06, B. S. A.—M. W. Evans, who is employed in the Office of Forage Crop Investigations of the United States Bureau of Plant Industry, visited the college, December 15-17. Since graduation, Mr. Evans has been at Pullman, Washington, studying forage crop problems and breeding grasses, chiefly timothy and alfalfa, partially in co-operation with the Agricultural Experiment Station at that place. A few weeks ago he transferred to New London, Ohio, where he will continue similar studies in co-operation with the Ohio Agricultural Experiment Station. While in the University, Evans was a member of the Countryman Board.

'06, B. S. A.—C. W. Mann is connected with the division of Pomology of the United States Dept. of Agriculture. He is located in California.

'07, W. P.—Mr. Ralph M. Moseley was married to Miss Edythe H. Potter on November 16th, at Cambridge, N. Y.

'07, W. D.—Albert Barnhart, is now in the Publicity Department of the J. Horace McFarland Company at Harrisburg. Since leaving Cornell Mr. Barnhart has had experience in dairy farming and is now endeavoring to get the means to launch a dairy farming enterprise of his own.

'08, B. S. A.—Clarence Lounsbury is a scientific assistant in the United States Department of Agriculture, and his address is in care of the United States Bureau of Soils, Washington, D. C.

'08, B. S. A.—A. W. McKay, assistant in investigations of fruit transportation and storage with the
United States Department of Agriculture, spent the past summer in California and will be in Florida this winter, with headquarters in Tampa.

'08, Sp.—H. O. Tiffany is managing a farm of 1000 acres at New London, Ohio. He is carrying on an extensive drainage development. Furthermore, he is building up a large dairy herd.

'09, B. S. A.—D. H. Fullerton writes that he spent a pleasant and profitable two months during the fruit harvest this year on the farm of Mr. W. T. Mann at Barker, N. Y. He says that judging from his experience he would advise such an apprentice-ship to all those starting out in the fruit business. He is at present attending the Rochester Mechanics' Institute perfecting himself in carpentry and forge work.

'10 Sp.—Q. J. Smith is now in the dairy business with his father, at Filmore, N. Y., in the Genesee Valley. The herd is composed of Jersey cattle.

'10 B. S. A.—E. L. D. Seymour, who during the past year had charge of the landscape work on the Turner Hill Farm, Ipswich, Mass., has temporarily engaged in editorial work with the Doubleday, Page Company, Garden City, Long Island. Mr. Seymour was a former editor of the Cornell Countryman.
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<table>
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<tr>
<th>Bag Size</th>
<th>Sheep Pulverized</th>
<th>Sheep Shredded</th>
<th>Hog Pulverized</th>
<th>Hog Shredded</th>
<th>Cattle Pulverized</th>
<th>Cattle Shredded</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 lbs.</td>
<td>$1.50</td>
<td>$1.50</td>
<td>$1.25</td>
<td>$1.25</td>
<td>$1.00</td>
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</tr>
<tr>
<td>500 lbs.</td>
<td>$6.00</td>
<td>$6.00</td>
<td>$5.00</td>
<td>$5.00</td>
<td>$4.50</td>
<td>$4.50</td>
</tr>
</tbody>
</table>

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SUBSCRIPTION PRICE, $1.00 PER YEAR
Entered as second class matter at the Post Office, Ithaca, N. Y.
Copyright by R. J. Shepard
Nearly every experiment station has shown by careful work the value of spraying and the relative efficiency of the different spray mixtures. It is a generally accepted fact that good fruit cannot be produced without intelligent and thorough spraying. The thoughtful grower would soon convince himself of this fact by his own observation. It is exceedingly interesting, however, to view the work from a practical standpoint and see what results the fruit growers themselves are actually getting. During the last eight years a detailed study of the orchards in five counties of New York State has been made. In this study or survey considerable attention has been given to spraying and an effort has been made to find out how much greater yield the sprayed orchards have given over the unsprayed.

The table given below, which is based on the averages of all the orchards in five counties, shows very marked and interesting results. The curve marked "yield and income" expresses this table diagrammatically. These figures are worthy of careful consideration.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Acres</th>
<th>Bushels</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprayed 4 times</td>
<td>160</td>
<td>316</td>
<td>152.88</td>
</tr>
<tr>
<td>&quot; 3 &quot;</td>
<td>1793</td>
<td>288</td>
<td>162.55</td>
</tr>
<tr>
<td>&quot;  2 &quot;</td>
<td>4491</td>
<td>276</td>
<td>140.39</td>
</tr>
<tr>
<td>&quot;  1 &quot;</td>
<td>2499</td>
<td>232</td>
<td>102.91</td>
</tr>
<tr>
<td>Unsprayed.</td>
<td>3285</td>
<td>200.6</td>
<td>79.20</td>
</tr>
<tr>
<td>Total acres</td>
<td>12229</td>
<td>200.6</td>
<td>79.20</td>
</tr>
</tbody>
</table>

The table is interesting because it expresses an average of so many acres, over twelve thousand in all. It shows clearly that there is a large increase in yield and income where the orchards are sprayed twice over those unsprayed. The increase in yield continues as the number of sprayings continue, though less marked after two applications. The increase in income is greater than the increase in yield though there seems to be a falling off in income in the case of the fourth application. Probably this can be explained by the small number of acres sprayed four times.

These differences are the actual results which the fruit growers themselves have been getting for the last four or five years in these counties. The figures are based on the averages of so many farms that they must be very accurate. It would seem that the value of spraying from the practical standpoint could not be questioned when, as these averages show, three sprayings give a yield of 288 bushels per acre and the unsprayed orchards average only 200 bushels, to say nothing of the more perfect fruit produced.

The table indicates that probably three sprayings have been the most economical and as these figures have included in the main the applications after the foliage appeared, we would say, according to our present understanding, that four applications including a dormant spray would be advisable for an apple orchard. Although the entomologists and plant pathologists give us the exact time of
application of these mixtures as determined by the development of these insects or diseases a good plan of spraying would be as follows:

1. Just before the leaf buds swell.
   Lime and sulphur, commercial brand diluted 1–8 or 1–10, according to its concentration, or the home-made mixture.

2. Just before the blossom buds open.
   Commercial lime and sulphur diluted 1–40, or Bordeaux mixture 3–3–50. Add to either mixture 3 pounds of arsenate of lead for every fifty gallons.

3. Just after the petals fall.
   Commercial lime and sulphur diluted 1–40, or Bordeaux mixture 3–3–50. Add to either mixture 3 pounds of arsenate of lead to every fifty gallons. This is the most important spraying for the codling moth and should be applied under high pressure in such a manner as to drive the mixture into the blossom end of the fruit.

4. About three weeks after the third application.
   Same mixture as number two.
ACRE AVERAGES FOR 12,229 ACRES IN WESTERN NEW YORK

INCOME in BARRELS and DOLLARS

NUMBER TIMES SPRAYED.

Dollars

Parrels
WHY kill weeds? There is no reason for killing weeds when you farm for a living only, but when you farm as a business you must have clean fields if the balance is to be on the right side of the ledger. A clean field has a meaning beyond the few bushels more grain harvested; a clean field means a cultured mind and stands for something in the man which in turn means prosperity of the broadest kind.

No general effective scheme for killing noxious farm weeds exists. The talk of crop rotation, the stock answer of the colleges to anxious enquirers, has failed in the past and must fail in the future and this for the reason of accommodation to environment. Wild mustard and wild radish were the peculiar pests of the "Three Field System," and they are the great pests of the most modern "Sugarbeet Factory System" with its intensive cultivation.

For a number of years the author has worked on the problem of weed eradication, and at present is engaged on an experiment of great magnitude, the cleaning of a thousand acre farm. The farm chosen for the work is located in the fertile Red River Valley district a few miles west of Winnipeg. In the system of agriculture practiced, large areas are devoted year after year to growing cereals.

From time to time in the past years weeds have appeared on the farm, and from small beginnings they are now disputing with the grains the possession of the fields. They have reduced yields, injured quality of sample, increased the cost of grain growing, and have detracted from the physical appearance of an otherwise beautiful farm.

The owner, realizing the serious conditions, sought for some form of relief, and I was fortunate in securing the opportunity to study his problem and plan and carry on a systematic campaign of weed eradication.

A careful survey of the property showed wild mustard present in large quantities; Canada thistle a close second in numbers; Frenchweed (Thlaspi arvense L.), sow thistle (Sonchus arvensis L.) and Kinghead (Ambrosia trifida L.) present in quantities and in the order named. Every field had been invaded; every fence, ditch and roadside had become a nursery for weed seedlings. Half acre spots in the fields where grain had been threshed from the stook were pest spots.

Every means known for weed eradication has been studied and when one has promised well it has been tried out on a large scale. Many methods have proven ineffective; others to be described are effective; and still others of a cultural nature are to be studied in the near future. The literature on the subject of weed eradication is becoming voluminous, and as usual the greater part comes from Germany, the home of real agriculture.

The problem was to clean the fields quickly, while growing crops if possible, and accomplish this with as little expense as possible. The following plan was adopted for the work:

Clean the open ditches to prevent overflows in the Spring; mow the road allowances; remove the rock piles; burn heaps of roots picked from the fields, burn the remains of straw stacks; remove the piles of rubbish about the farm-yard; mow under and alongside of the fences and secure a permanent sod; add no weed seed to that already in the ground; clean the seed sown on the fields; general spraying for the destruction of annuals like wild mustard and Frenchweed; spot spraying with a kill-all-chemical for
A SPRAYING MACHINE FOR A THOUSAND ACRES OF GRAIN
FILLING A FIELD SPRAYER FROM A TANK WAGON

destroying perennials; hand pulling of annual not controlled by spraying; threshing from stack instead of from stock; tillage of stubble fields and Summer Fallow.

It will be seen at a glance that this plan divides itself into CLEANING UP and TILLAGE (Spraying has been looked upon as a tillage operation in Germany.)

Two ways of cleaning were chosen, spraying with a kill-all-chemical which destroyed all weeds down to the ground, and in many instances Canada thistle and sow thistles six to eight inches under the ground, and mowing with short scythe. The material cut was either fed to hogs or dried and then burned.

The open roadside ditches grew every weed to be found in the infested fields. By them the much dreaded Kinghead had been distributed over the low spots on the farm.

The road allowance—everywhere the breeding place for weeds—was cleaned by mowing with machine using the brush bar. In this way Canada thistle, sow thistle, kinghead, were prevented from seeding. The low brush found on the road, the prolific cause of drifted roads in winter and the catch-all for weed seed all the year through, was cut down and grubbed out.

In past years the rocks and the roots of the willow which formerly covered the prairie had been carried to the edge of the field and piled, and to make these secure places for weeds to grow odds and ends of barb wire had been added to the piles. At considerable cost and discomfort these piles were removed. The roots were used to heat the boilers in the piggery.

The remains of straw stacks had been burned in the fields. Ashes, charred straw, a tangled nonburnable mass spotted the farm. These spots remained uncultivated and soon became the nursery for all the farm weeds, especially Canada thistle. Immense quantities of wild mustard seed sprouted from time to time but very few plants reached maturity. These spots were removed by burning, a very slow process, but persisted in until the ground was finally laid bare.

Piles of old machinery, scrap iron, broken posts, rotting lumber, rotting straw were scattered about the farmyard. Each pile had all the weeds growing luxuriantly. The junk man was called in to care for the iron and what material could not be used and what would burn was burned.
The farm clean and the plan to keep it so determined upon, the tillage, planting, and harvesting methods were studied and when necessary changed with the one idea of killing weeds.

In the past, manure containing viable seed had been added to the soil. The use of manure direct from the barn to the land is a menace, and this is especially true when mill stumps are fed. On this farm the manure from 150 head of cattle will be rotted before going onto the land, and as far as possible, will reach the grain only through the hoed crops. In the great Northwest up to the present time, the growing of hoed crops like potatoes, maize, mangel wurzel has had no place.

A very interesting study for a rainy afternoon on the farm when work is slack, is the subject of homely farm proverbs having to do with crop growing. Many and many pithy sayings known to our ancestors contained the quintessence of farm wisdom. One of the most common sayings has to do with weeds, "One year's seeding is nine years weeding." No farm can be cleaned and kept clean if this is forgotten or neglected. The noxious weeds are constantly entering the farm through dirty seed and this farm had been no exception. Now seed is secured only from reputable dealers, carefully cleaned with a good fanning mill, and all floating seed removed when the grain is bluestoned.

The destruction of wild mustard in crops of growing grain by spraying with inexpensive chemicals has been firmly established wherever agriculture is carried on as a science. In 1908, it was shown by the author that Frenchweed was destroyed by spraying with sulphate of iron solutions under certain favorable conditions of humidity.

All the grains on the farm, in all over 600 acres, were sprayed with this material to destroy the two annuals mentioned, and in every instance the work was successful.

Experiment was made on another farm, spraying maize with a 20% solution sulphate of iron to destroy mustard plants so close to the stalks that they could not be reached with the teeth of the cultivator. This experiment was successful and no permanent injury to the corn resulted. In the coming year the maize fields will be sprayed to destroy mustard.

The hardest problem has been and still is the destruction of the two perennials Canada thistle and sow thistle. Tillage methods in the semiarid Northwest have so far failed. It is well known that the Canada thistle thrives when the land is summer fallowed, and the same is true of the sow thistle.

This year early grain was used on the worst fields, but this cannot be persisted in for the time would soon come when the whole farm would be given over to growing these crops. The greatest hope lies in the direction of spraying with chemical solutions.

Under certain conditions at present, not understood, Canada thistle is killed by spraying with sulphate of iron, but this means cannot be relied upon at this time. Solutions of all the inexpensive heavy chemicals were used as sprays in 1910, but in no instance met with the least success. At last one chemical was found, which, applied in the form of a spray, quickly destroys all parts of the weed above ground and in instances has destroyed the vertical root down to and including its juncture with the horizontal root. Extended experiments will be made with this material in 1911 and it is to be hoped that they meet with success.

What has been said of the Canada thistle is true of the sow thistle.

Cutting Canadian thistle and sow thistle down close to the ground was without effect, the plants simply redoubled their efforts to produce seed and store up reserve stuff in the fleshy roots. Where a single plant carried one flower stock previous to cutting it carried a half dozen after cutting. Curiously the plants accommodated themselves to being mowed by not sending up long stems bearing buds but in their place stems so short that the second attempt at cutting proves ineffectual.
One of the already great and still growing weed pests of the Northwest is Kinghead. When this weed occurs in grain crops spraying with chemical solutions is useless labor.

This weed is waterborne in habit and when the snow melts in the Spring the water held back by the stopped ditches overflows and runs across country and accumulates in all the low spots in the fields overflowed. The kinghead seed is carried and left in the low moist spots and with the coming of warm days grows and soon overtops the grain. To control the spots of kinghead gangs of men hand pulled the fields and this will be continued in 1911.

When the grain was harvested, the fields were given a light stroke with the spring tooth harrow to prepare a seedbed for the rapid germination and growth of the seed of the annuals lying near the surface of the soil. Mustard and Frenchweed soon made the fields green, but the plants were cut down by the first frost. This procedure, followed by rolling when the weather is not favorable to seed germination, offers a sure means of destroying large quantities of mustard and Frenchweed seed. Late cultivation to germinate seed to be killed by the first frost, and early cultivation with subsequent tillage to kill the seedlings, cannot be too highly recommended as a means for killing annual weeds. On the Manitoba farm the short periods before and after harvest reduces the value of this procedure but with threshing from the stack the fall cleaning is sure.

In past years the grain had been threshed from stock in the field. The powerful blast of the separator scattered the wind borne seed of the Canada thistle and sow thistle high in the air to be carried by the ever blowing wind to the farthest limits of the farm. Heavy seed like wild mustard supposed to be caught and prevented from falling to the ground invariably fell to the ground and grew the following year.

When the threshing machine had been moved from one part of a field to another part it left a trail of weed seed. Threshing out of stack in the farm yard prevented this seeding.

In past winters a hundred wagon tracks had been made carrying the straw from the stack in the field to the barns, and each track was richly seeded with weed seed.

All the grain grown on the farm in 1910 was stacked in the farm yard and threshed from there. The fields surrounding this yard will grow hoed crops the coming year and any wind-borne seed taking root in them this year will be destroyed the coming year.

There are great advantages in threshing from the stack: Stacked grain can be insured; stacking always gives a better "sample;" the grain off the fields, the Fall tillage can begin and continue until the ground freezes.
The work as outlined above will be carried on until the farm is clean; meantime efforts will be made to clean the district and thus insure against reseeding. The eyesore on almost every farm is the fencing. Usually tumbled down, always unkempt from the grass of several summers piled against the bottom wire. Weeds and seed traveling across the farm propelled by the wind finally reach the fence and find a place especially prepared for them. All the noxious weeds were found along the fences on this farm. The mass of green and dry organic matter was cut with a brush scythe and pulled out with the rake and opportunity given the grasses to form a sod under and along both sides of the fence. Maintaining driveways next the fences though frowned upon by penny wise farmers, has proven a sure means for keeping the fences clean. This ended the cleaning up, and it was wonderful how much better the farm looked. The farm untidy in spots is like the man with a good suit of clothes and wearing shabby shoes. No matter how many and fine the buildings, the beautiful stretches of pasture dotted with fine stock, all is lost sight of in the presence of unkempt spots.

THE TESTING OF WHIRLING-SPRAY NOZZLES

By H. W. Riley
Assistant Professor of Farm Mechanics, Cornell University

LOOKED at in a certain light the spray nozzle is the most important part of a spraying outfit because upon it rests the responsibility of properly depositing the spray mixture upon the tree or plant; be the pump ever so good, the engine ever so powerful or the agitator ever so efficient all is for naught without a good nozzle.

According to the results to be attained the design of the nozzle is changed. Thus, when our aim is to force poison deep into the blossom cups of apples we need nozzles with heavy driving delivery while for combating fungus diseases and for practically all other spraying we need nozzles that will deliver a fine spray with more or less driving power depending upon the crop. To answer these needs the whirling-spray nozzle is almost universally used so that the invention of this device becomes an event of considerable importance and it should be a cause of pride to Cornell University that this invention was perfected here in 1879 or 1880 by the then substitute professor of Entomology, Wm. S. Barnard, the experiments being carried on in McGraw Hall.

As its name implies this nozzle secures the breaking up of the liquid by imparting to it inside the nozzle a rapidly whirling motion and then allowing it to discharge into the air thru an opening placed at the center.
about which the liquid whirls. The chamber in which the whirling is secured is called the eddy chamber and the openings leading diagonally into it may be called the throat openings. The spray from nozzles of this type is in the general form of a hollow cone with more or less straight spray in the center. The sharpness of the cone, the fineness of the spray, its driving power, the amount of straight spray in the center and the amount discharged per minute depend upon a number of factors the relative importance of each of which has not yet been determined but among them may be mentioned the pressure used, the size of discharge orifice, the thickness of the edge of the discharge orifice, the actual size and also the proportions of the eddy chamber, the shape of the top and of the bottom of the eddy chamber, the angle of entry of the throat into the eddy chamber and the number of throat openings used.

The Department of Farm Mechanics at first attempted to determine the laws underlying the design of whirling spray nozzles by testing a number of commercial nozzles in connection with a sort of spray camera or "Sprayograph," an isometric drawing of which is reproduced herewith. While interesting individual results were obtained from these tests nothing fundamental could be determined because in changing from one commercial nozzle to another more than one factor was changed and while the two nozzles would behave differently in certain respects it was impossible to determine exactly the cause of these changes. The testing of commercial nozzles was, therefore, temporarily discontinued until there could be obtained an experimental nozzle by means of which one factor at a time could be changed. Such a nozzle is now under construction.

A brief explanation of the "Sprayograph" may be in order. The aim is to allow colored liquid sprayed from the nozzle to strike against white paper for a period of time the length of which must be under control. During the exposure both the nozzle and the paper must be stationary and a record of all parts of the spray must be taken. In the plan employed an oiled canvas curtain is stretched over four rollers and is driven over the rollers by a chain at each edge which runs on gears mounted on the ends of the rollers. Only two of these gears are drivers and the speed of these drivers may be changed by the chain drive between the two bottom shafts. Power to run the curtain is obtained from a gas engine at the right. The ends of the curtain do not meet but leave a slot of any desired width as shown. Paper in rolls about six feet long is hung from a carrier on a track running inside the curtain and this paper is backed by a wire screen to prevent its blowing. To take a record the paper is spread over the wire screen behind the curtain, then by means of the engine the curtain is turned until the slot is on the side away from the nozzle when the spray liquid is turned on and drives against the blank surface of the curtain. When all is ready the power is turned on to the rollers again, the slot in the curtain moves down across the face of the paper permitting the spray liquid to strike the paper for an instant only the length of which is determined by the width of the slot and the speed of the curtain. Power is turned off, the curtain stops, the paper carrier is pulled out on the track and the record sheet may be torn off on the knife attached below the carrier. In this way, a Sprayograph record is completed.
SPRAYOGRAPH
DWARF APPLES
By U. P. Hedrick
Horticulturist at the New York Agricultural Experiment Station, Geneva, N.Y.

We are now in the midst of the periodic revivals of dwarf apples. Several prominent fruit growers recommend the growing of apples on dwarf stock; a book has been written on the subject; a number of experiment stations are trying the dwarfing method, and the horticultural press is telling “Why You Should Grow Dwarf Apples.” Special interest in dwarf apples began at the New York Agricultural Experiment Station in 1901, when the State Fruit Growers’ Association, The Eastern New York Horticultural Society, and The Western New York Horticultural Society appointed committees to confer with the authorities at the Station for the purpose of locating experimental orchards of dwarf apples.

Three sites were chosen for experiments: One at Kinderhook, in the Hudson Valley, on the farm of Edward Van Alstyne; another at Fayetteville, Onondaga County, on the farm of F. E. Dawley, and the third at Carlton, Orleans County, on the farm of Albert Wood & Son. The trees in these orchards were budded on three stocks, and this leads to a consideration of the whole matter of stocks. Several kinds of dwarf apples are used as stocks upon which to bud or graft free-growing apples to dwarf them. These have been used in Europe probably for several centuries, and from this experience two kinds have been selected as having pre-eminent merit as dwarfing stocks; one the Paradise—the other the Doucin. Of the two stocks, the Paradise makes the smaller tree, and is sometimes called the “Dwarf Apple” the Doucin, the “Half Dwarf Apple.” The effect of grafting the common varieties on Paradise stock is a very diminutive or bush-like apple tree. These stocks are grown in Europe, mostly in France, and very largely by means of mound layers, a fact which indicates that the plant is inclined to stool or sucker, often forming, when left to mature, a true bush. This stock is also extremely shallow-rooted, and needs much fertility in the soil, and still more an abundance of moisture. Not all varieties of apples thrive on Paradise roots, scions of many failing to make perfect unions. The Northern Spy, Ben Davis, Baldwin and R. I. Greening seem to be examples. The union is very poor with nearly all varieties unless the tree is trained to some style of dwarf head.

The Doucin stock produces a tree about mid-way between the Paradise dwarf and the common standard tree. Nearly all varieties of apples are thought to produce a good union with this stock, though we are not finding this quite true in our experiments. Its food and moisture requirements seem to differ but little from those of the standard trees, though without doubt they should receive much more attention in training. With both of these dwarfing stocks it is necessary to make sure that the scion does not throw out roots and give what is called a “bull” tree. Unfortunately, the scion may root at any time from setting to maturity. Doucin stocks are also brought from Europe and if from England care must be exercised as to the name of the stock ordered; for the English call the Doucin stock “Broad leaved Paradise,” and the true Paradise “French Paradise.” This confusion in names has caused much trouble in ordering, and without doubt there are many plantations in America on stocks wrongly named.

Since practically all of our apples are now on standard stock all are familiar with it and little need be said of it here. The trees upon which apples are grafted or budded for standard trees come from France for the most part, and are called “French Crabs,” the word crab being used in
the sense of a wild or inferior tree, not necessarily the true crab apple. These stocks are grown from seeds and are imported to America in great numbers. Some standard stocks are grown in America and are known to the trade as “domestic stocks.” All varieties of apples make good unions with standard stocks.

In Europe, dwarf apples have a number of advantages over the standard trees. Advocates of the smaller trees claim the same advantages for the dwarfs in America. It is very doubtful if these hold on the two continents to the same degree, yet they may be set forth here.
1. Dwarf trees, especially those on Paradise stock, come in bearing earlier than standards.
2. All orchard operations are more easily performed.
3. Winds cause less injury to the trees and crops.
4. The small size of dwarf trees permits the planting of a greater number of varieties on a given area.
5. The fruit from dwarf trees is of higher quality as to size, color and flavor.

We are now ready to see how the experiments by the Geneva Station so far justify these claims.

The Van Alstyne orchard contains 306 trees distributed among the three stocks as follows: Standard trees, 27; on Doucin stock, 153 trees; on Paradise, 126. These were distributed among the following varieties: Baldwin, Boiken, Holland, Hubbardston, Jonathan, Lady, McIntosh, R. I. Greening, Rome, Sutton, Wealthy and Wagener.

The Dawley orchard is planted with 512 trees, the number on each stock being: Standards, 42; Doucin, 161; Paradise, 309. The following are the varieties: Alexander, Baldwin, Boiken, Esopus, Gravenstein, Green Sweet, Grimes, Hubbardston, Jacob Sweet, Jonathan, Longfield, McIntosh, Monmouth, Northern Spy, Pumpkin Sweet, R. I. Greening, Rome, Sutton, Wagener, Wealthy, Wolf River and Yellow Transparent.

In the Wood orchard there are 300 trees: Forty-five on standard, 90 on Doucin and 165 on Paradise stocks, distributed among the following varieties: Alexander, Baldwin, Ben Davis, Boiken, Gravenstein, Jonathan, Holland Winter, McIntosh, Monmouth, R. I. Greening, Rome, Sutton, Lady, Bismark, Twenty Ounce and Wealthy.

Taking up the several claims for dwarf trees, we have to discuss first early bearing. The following are the combined yields for the several years in the three orchards:

The first year after planting—trees three years from the bud—one apple was borne by a Boiken on a Paradise stock. The second year after planting, the 602 Paradise trees in the three orchards bore 237 apples, Boiken, Ben Davis, Wealthy and Wagener producing the crop. The 444 Doucin trees bore twenty-one apples, distributed among nearly as many varieties. The 114 standard trees bore no apples this second year. These figures give an average of less than half an apple to the tree for the Paradise stock, hardly justifying the oft-made assertion that trees on this stock bear paying crops the second year from planting. The third year the Paradise trees bore in the three orchards an average of 1.6 apples per tree. The Doucin stock an average of a little over a half apple per tree. The 114 standard trees this year bore two apples. In 1908, the fourth year from setting, the Paradise trees bore an average of 5.7 apples per tree; the Doucins 1.8 apples; the Standards this year bore nearly a third of an apple per tree. The fifth year from setting the 602 Paradise trees bore 12.7 apples per tree; the 444 Doucins bore a fraction less than six apples per tree and the 114 Standards produced a half apple per tree.

If varieties are compared there is a tremendous variation. Boiken, Ben Davis, Wealthy, Wagener, Longfield, Rhode Island Greening, and Rome, about in the order named, have been the largest bearers, while Sutton, Northern Spy, and Twenty Ounce did not yet start to bear on any of the stocks until the sixth year.
These figures show that while apples on Paradise stock come in bearing earliest, they do not bear profitable crops, as is so often stated, two years from planting, and only in one of the three orchards could there have been any financial return from the varieties on Paradise until the fifth year.

As to the claim that orchard operations are easier in dwarf orchards it is apparent at once that such is the case for nearly all operations, yet there are exceptions that in these days of first-class orchard equipment nearly offset the greater ease with which dwarf trees may be sprayed and the fruit thinned and pruned. I refer to cultivation and pruning. The close planting and low heading in dwarf orchards make it difficult to cultivate properly and to some extent to get about at all in the orchard. In pruning the work with dwarf trees is vastly greater. Not only must there be the usual winter pruning, but also a much more painstaking and laborious summer pruning coming at a time when help can be illy spared. Moreover, each season it is necessary to dig about the trees to see that the scions are not taking root. In these experiments it has been found much more difficult to train the dwarf trees with good heads than to similarly shape standard trees.

Coming to the third claim for dwarf trees, that wind does less damage to trees and crops,—this experiment demonstrates nothing. From observation it is certain, however, that the loss from gales in a windy country and high-headed trees is greater. The difference between dwarf and low headed standard trees is greater. The fourth claim of merit is as to the small size whereby more dwarf trees can be planted on a given area. This is an advantage for amateurs who have little room and want many varieties, and to the fruit grower who may want to test varieties. These three orchards demonstrate very plainly, however, that the enthusiasts who are recommending for America a distance of anywhere from six to twelve feet for Paradise stock and eight to sixteen for Doucin, are putting them far too close together. In America these distances will have to be doubled unless the soil, trees and methods are very different from those in these experiments or in the many orchards that have come under the writer's observation.

The claim in regard to greater size, higher color and better flavor for the fruit of dwarf trees, is one most often made, and yet in these three orchards we have been badly disappointed in these regards. Where comparisons have been possible the fruit from dwarf trees has been no better in size and flavor than that from standard trees, or that to be found in many orchards of the same size and varieties in different parts of the State. Whether this will continue indefinitely remains to be seen, but certainly up to the present there has been little to justify the claim for better quality from dwarf trees.

The work in these orchards brings out several marked disadvantages of dwarf trees. The first is that the trees are more expensive than standard trees. It costs more to propagate and grow them and the nurserymen must get more for them. A second is that there is now and has been for generations a dispute as to what the true Paradise and the true Doucin stocks are. When to this confusion is added the disposition of some nurserymen to substitute, those who have had experience in buying trees know well what the possibilities are of getting the right variety on the right stock. Third, as we have pointed out in one or two particulars, dwarf trees need more care. This applies to all particulars. The loss of dwarf trees by death, from one cause or another in these three orchards is much greater than in orchards of all standards.
Fourth, while this test of dwarf trees does not prove it, all concede that such trees are much shorter lived than standard trees. How much shorter cannot be said without more definite data than can now be found.

In conclusion, while this experiment is not nearly finished, it is apparent to all who have been working with the orchards that dwarf apples will not take the place of standard apples in commercial orchards. Whether they can be profitably used as fillers with standard trees is a question. The writer would prefer standard trees as fillers. It may be that some varieties can be profitably used as dwarf fillers. Possibly a few sorts may be used in limited numbers for a commercial orchard of dwarfs. The only place for dwarf trees at present seems to be, under some conditions, in the garden of the amateur.

RECENT ADVANCES IN OUR KNOWLEDGE OF LIME-SULPHUR

By J. P. Stewart
State College, Pa.

In a rapidly progressing subject such as lime-sulphur, it is well to get our bearings occasionally by looking back over the road we have traveled. The career of lime-sulphur as a spray material has been rather checkered. Starting in 1886 at Fresno, Cal., when a Mr. Dusey borrowed a pail full of sheep dip from his neighbor, under the impression that if it killed the lice on sheep it ought also to do it on trees, it speedily became the leading contact insecticide throughout the Pacific Coast. It was then brought East in 1894, soon after the discovery of scale in Virginia, was tried in Maryland and discarded, being found apparently useless under eastern conditions. It was partially revived by Marlatt in 1900, but failed to secure wide acceptance until after the work of Forbes and others in 1902. From the latter date until approximately 1909, it remained the standard insecticide throughout the country, in spite of its many objectionable and disagreeable features. This was the old, home-boiled, dilute mixture which finally came to be made by using 15 or 20 pounds of lime and 15 pounds of sulphur to 50 gallons of total product.

While this development was taking place in the dilute mixture, another preparation, without the objectionable features, was gradually coming to the front. This was the so-called commercial or factory-boiled lime-sulphur. It was storable, free from sediment, easily applied, and though much denser than the home-made preparation, it was practically free from crystals. Just when and by whom it was first used as an insecticide, I have been unable to discover. It appears, however, that along in 1902, or 1903, a Stock Food Company of Omaha, learned that some of their patrons in Utah were buying a few extra barrels of a concentrated cattle-dip for application to trees. Later inquiries and tests showed the value of this, and from that beginning has developed the present remarkable production of commercial lime-sulphur materials. Both types of lime-sulphur insecticides, therefore, came into use rather accidentally and apparently independently, as the result of a transfer in use from dip preparations.

Along in 1908, when the writer became interested in the situation, the making of these dense, non-crystallizing insecticides was supposed to be accomplished by some difficult, factory process, wholly beyond the capabilities of the orchardist, and consequently worth about three times as much to him as we now know they can be readily made for at home.

At this time it was learned that
Cordley in Oregon had made a “stock solution” lime-sulphur. Details of his work were meager, however, and not generally available. There also appeared to be some doubt as to the correct ratio of lime to sulphur, and the proper concentration to be used. For example, in the version of his formula given by Parrott, (New York Geneva Bul. 319) a 60-to-125 ratio was advised, while in his own later account, (Better Fruit, April 1909) 60-to-110 was used; the latter ratio having appeared in 1906 in a formula used by Thatcher, at one-half the present weights. (Washington Bul. 76). As to concentration used, it appears that with the larger amounts of ingredients (60 lbs. of lime to 125 lbs. of sulphur), only enough water was added at first to make 45 gallons of mixture, while in the other case the total was brought up to 60 gallons. No further additions of water were indicated in either account to make up for the losses in boiling, which was to be for one hour or more. After boiling and settling, only the clear liquid obtainable above the sediment was drawn off; and in the former case this amount of liquid was diluted to make the final 50 gallons of concentrate. This was again diluted for use, at the rate of 1 to 10 (total), and the sediment was to be re-used in succeeding boilings.

The faults and uncertainties of this method are very evident now; and it was doubtless fortunate for the home-made concentrate that no wide attempt was made to strictly carry it out in orchard practice. It is of interest, however, as marking the advance made up to the early part of 1909.

The next move was made at the Pennsylvania Station. The work had begun before the above accounts appeared, though most of their facts were known. The general attitude and prospects for success at that time may be gathered from a remark by one of our leading insecticidal chemists, then at the Station, whom the writer was trying to enlist in the cause. His advice was to go ahead with the work but not to be disappointed in case nothing was learned, because the whole subject had been studied thoroughly already by chemists, and nothing new was to be expected.

The results of the subsequent work have appeared in various places, and we can here merely mention some of the leading facts established. We found that the crystals occurring in the old, dilute preparation were due to excess of lime. The value of this excess was questioned and later proved to be unnecessary against scale, as was already known in the case of fungi. The cause of the crust which develops over concentrates was shown to be due to exposure to air, and its prevention was readily accomplished.

The proper ratio of lime to sulphur was studied, and the ratio of these materials in solution was found not to be constant as Thatcher supposed (Wash. Bul. 76) but to vary primarily with increase in density. Thus in dilute solutions the ratio occasionally ran as low as 1 to 1.8, while in dense concentrates it averaged about 1 to 2.5, with individual cases much higher. Owing to losses in making and impurities in the best of our commercial limes, however, we found definitely that for orchard conditions the best ratio of ingredients is approximately 1 lb. of high calcium lime to 2 lbs. of sulphur.

In connection with the matter of concentration, the relation existing between volume, density and utilization of materials was determined. The greater densities, obtainable with lower volumes of concentrate, were shown to be associated with less economical use of materials, and hence to be undesirable. Where storage conditions are to be met, however, a final volume of 1 to 1.1 gallons of total product is about right for the weights of ingredients named above. Other-

1For details and data see Penn. Sta. Rpts. for 1908-9 and 1909-10; Bulletins 92, 99 and 106; Rpt. of Soc. for Hort. Sci., 1909; and Rural New Yorker 1910, pp. 944 and 956. Bull. 99, obtainable from the Director of the Experiment Station, State College, Pa., gives details of preparation.
Figure 1. (Original). A new type of strainer for lime-sulphur or other spray materials. The liquid enters at "A" passes upward thru the screen and is carried where desired thru a hose attached to the spigot. The coarse particles thus fall away from the screen instead of accumulating on it. Any solution remaining with the sediment may be secured by running through it the water used in the next boiling.
wise somewhat greater volumes may be used, diluting according to density in all cases.

The sediment in properly made concentrates was found to actually occupy less than 10% of the total volume, tho by settling alone it apparently occupied 30 to 50%. Most of it is unobjectionable in the home preparation, but for more readily removing its coarser portions, we have recently made a new type of strainer, the construction of which is shown in the accompanying figure. The usual clogging is avoided in it by straining upward, the coarse particles falling away from the screen instead of accumulating on it as in other strainers.

The amount of sediment was found to be influenced by the manipulation, by the ratio and purity of the materials, and by the amount of boiling. The best index for completed boiling is the evident dissolving of the sulphur granules.

Ordinary winter temperatures were found not to exert any permanent effect on the concentrates, the only danger in freezing apparently being the possible breakage of containers, and the freezing points lowered with increase in density. Acids and carbon dioxide, however, readily breakdown the solution.

In connection with the use of lime-sulphur, the first definite system of dilution according to density was developed, foliage tests were made, some of the conditions influencing spray injury were determined, and the thorough control of scale on apple by summer applications alone was demonstrated, (Rural New Yorker, 1910 p. 944). The amount of spray injury was found not to depend exactly upon density of application, but rather upon the density attained on the leaf before evaporation is complete. This was affected by the abundance of application, the density of the material applied, and the size and location of the drops retained by the leaves, the younger leaves and under surfaces being most vulnerable. (Penn. Rpt. 1908-09: 286-89; and Bul. 99:15). Injury is also especially liable to occur after applications of bordeaux or after previous applications of lime-sulphur which have broken the epidermis. This accounts for some of the anomalous cases of severe injury that have come to our attention during the last two seasons. (Rural New Yorker 1910: 1096; and Penn. Bul. 106: 11-13).

The recent work at various other stations cannot be adequately treated in the present space. The general outburst of activity along all lines of sulphur sprays has been quite remarkable. The excellent work of Scott at Washington in showing the usefulness of the self-boiled preparation, especially in the control of peach diseases, and also of Quaintance in showing its value in the summer control of scale on peach are worthy of special note. Wallace's extensive work at Cornell against apple diseases, his demonstration of the special value of the lime-sulphur-lad-arsenate combination, and his emphasis of the relation between broken epidermises, by scab or insects, and lime-sulphur injury are also noteworthy. This injury is thus brought in line with that of bordeaux, as pointed out by Cran dall in Illinois, and with that of arsenicals, as pointed out by Gillette in Iowa (Iowa Bul. 10, 1890). Parrott at Geneva has demonstrated the value of sulphur sprays against blister mite, and has shown the worthlessness of the sediment against scale. Van Slyke and Bosworth at the same place have emphasized the general undesirability of magnesium in lime used in the ingredients; and Waite at Washington has called attention to possible values of copper and iron sulphids. Besides these workers, Taylor in Missouri, Fulmer and Caesar in Ontario, Bonns in Maine, Volck and Ballard in California, and many others are doing their share in the present movement of advancing, verifying and perfecting our knowledge of the making and use of sulphur sprays, and still there is work to be done.
SPRAYING FOR WEEDS

By R. D. Anthony
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The weeds that injure our field crops and the fungi that injure our fruit crops are both plants, in fact, we could say that the fungi are weeds growing on other plants instead of on the ground. For years we have been used to spraying the plants we call fungi to destroy them and now we are finding that it is just as possible to destroy certain of the plants which we call weeds by spraying. Wild mustard (Sinapis arvensis L.) is one of the weeds which is most certainly destroyed by proper spraying, using either sulphate of copper or sulphate of iron. This weed is especially troublesome in spring grains where cultivation is not possible so the discovery of another way to control was an important step toward better crops.

On many farms in this state the raising of oats, buckwheat, and rye has been discontinued because of wild mustard while on others the yield has been materially decreased. It was for this reason that field spraying experiments were started last summer in cooperation with Prof. Warren of the Agricultural College. Five localities were selected, covering a belt extending nearly across the state and embracing a variety of conditions. The first spraying was done on the farms of Jared Smith and Gilbert Townsend near Trumansburg, when the oats and mustard were from three to eight inches high. A Binks traction machine especially designed for field spraying was used. It covered a strip of about sixteen feet and, after we learned the necessity of keeping the

WILD MUSTARD IN OATS
pressure high enough to give a fine drifting mist spray, we could wipe the mustard out of ten acres of grain in an afternoon easily unless the weather man decreed otherwise. If rain fell within eighteen hours the efficiency of the work was greatly reduced and several times it was necessary to repeat the spraying because of this. We next attacked the oat fields in the fertile Genesee valley on the Wadsworth estate near Avon. Here we used a potato sprayer by adding extra nozzles to fill the spaces left uncovered by the potato boom. Rain dogged our footsteps till we were forced to abandon one field but plots were successfully sprayed in two others. It was in photographing these fields that we learned a few facts by dear experience. Our spraying results were so satisfactory that we were especially anxious to get good pictures but our plates and those of a professional were total failures because, except under special conditions, yellow and green show as the same color on a photographic plate. It was not till a week later that we discovered by chance that when a piece of colored glass, called a "ray filter," is slipped over the lens the blossoming mustard will show up as if by magic on the plate.

Near Batavia there was a farm where two years before the oat crop had been nearly a total failure because of mustard. The present owner, Mr. George Legg, was determined to clean the farm and when he learned what we were after he gave us a warm welcome. The only machine available was an old "Standard" potato sprayer. We used it with many misgivings and were agreeably surprised to find that it did satisfactory work. We sprayed oats, alfalfa seeding, and spring wheat with excellent success though the rain necessitated a second spraying on a couple of plots.

The George Junior Republic was disturbed because its oat fields were being choked out by mustard so we took the train for Freeville. We put a field boom on a Watson potato sprayer but the pump had seen better days and our spray looked more like a rain than a mist, also, the mustard in many places was in full bloom so we were doubtful of our results. Again we were agreeably disappointed for only a few plants were not destroyed. When we inspected the work later we found that the eminent citizen of the Republic who had done the driving had supplied us with so many un sprayed portions that the field was striped like a zebra. Needless to state
it made a striking demonstration. It was here, as the pictures show, that use was first made of our recently acquired knowledge about the ray filter.

A good farmer will never rest content while his fields are covered with mustard, not only because his yields are thus decreased, but because of the example to the neighborhood. Jared Van Wagenen of Lawyersville, up in the hills of Schoharie County, is such a farmer and for years he has carried on an up hill fight against this pest. The ground, however, is so saturated with mustard seed that even after fields have been kept clean for years they are yellow with it when a spring grain is put in. He had a hand pump mounted with a home made tank and to this we attached a field boom. Unfortunately our nozzles were built for large capacity and high pressure and so the hand pump gave us a poor spray. Had we used smaller capacity, lower pressure nozzles of the type of the "Tiger" and "Mistry Junior" the work would have been more satisfactory with this outfit. Even with the poor spray the results were good.

In all these places we used sulphate of iron and made our solution by dumping a 100 pound bag into a 52 gallon barrel of water and stirring with an old hoe for a few minutes. The sulphate dissolves like sugar and, if the solution is strained through a couple of thicknesses of cheesecloth as it is poured into the tank of the machine, there will be no trouble with nozzles clogging. From 40 to 50 gallons should be applied to an acre. As the sulphate of iron cost only about $1.10 per 100 lb. sack, our cost for spraying an acre ran from $1.25 to $1.50.

Copper sulphate has also been used to spray mustard with success and, in order to test out the comparative efficiency of these two sulphates, a 50 acre field near Gardner, N. D., was sprayed by Dr. H. E. Horton, one-half with the sulphate of copper and the remainder with the sulphate of iron. The effect on the mustard was the same with both sprays. Kinghead, an important weed of the northwest was not as severely injured by the copper as by the iron spray. The grain sprayed with sulphate of copper
was two inches shorter than the other, not as healthy in color, and the heads were not filled as well. The cost was nearly the same in each case.

The attention of the Experiment Stations is being directed to this kind of work and eventually many of the weeds of our grain fields and meadows will be controlled by spraying. Judging from observations made by German agronomists and from some experiments in this country, dodder in clover and alfalfa can be eradicated by spraying. Satisfactory results are being obtained also with Canada thistle, sow thistle, the much dreaded weed of Manitoba, and with dandelions.

A LETTER FROM PROFESSOR ROBERTS

The December number of The Cornell Countryman reached me this morning so I have one more thing to rejoice over, for it is a most creditable publication and gives evidence of the rapid progress which is being made in rural life and the extent of the means being used to promote Agriculture in State and Nation. I rejoice also because the farmers are receiving on the average a more adequate money reward for their capital and labor. Most of them can now look you in the eye since they are not watching out around the corner to dodge their creditors.

The high prices are indeed a little hard on those who have been Emeritus and do not fall into the Carnegie Foundation Class. Really it smooths out some of the wrinkles which appeared in my face when I was raising corn and selling it at ten cents per bushel and live porkers at two cents per pound, when I see the people who are determined to live in the city and get their living by simply passing things along, pay sixty cents for a
dozen eggs or a dozen pomelos and the same for two pounds of bacon. Well, they don't have to eat these foods if they don't want to. Out here in California, vegetables are cheap and abundant the year round but I notice that the foreigner who raises them still rides in the manure wagon while the men from Chickenville (Petaluma) and from Citrusville, (Redlands), twist the noses of their machines, and wave you a joyous farewell, only watching for holes in the road and that they do not exceed the speed limit.

Those well kept Citrus ranches what a joy to the eye, what a safe investment at $1000 per acre and what a certain profit of from 20% to 30% on the investment! Of course the thermometer gets up to 110 in the shade sometimes, but you don’t have to sit in the shade if you don’t want to.

This is certainly a land of surprises. This morning the roofs and sidewalks were covered with a thick coat of sparkling frost yet neither the pelargoniums nor but few of the nasturtiums show any tendency to wilt while the orange tree in the yard, though in bloom, shows no injury. The native Californian will tell you that the cold here is not like it is "Back East" and I am inclined to think that there is something in it, at any rate I know the fire-wood is not, for it makes you three times hot, once when you pay the bill for it, once when you prepare it for the stove and once when you burn it. Having studied practical political economy at Cornell, I pay the $12 per cord cheerfully, and rejoice that the man who secured the wood from the distant mountain side had his breeches nerve warmed when the golden dollars struck the bottom of his pocket. So I saw the wood and proceed to develop the second potential warmth wrapped up in those cords of natural mountain resources.

Whichever I write about rural life whether sedately or in a jovial strain, the thought of the farmer's right-hand man, the "hired man," comes up all unbidden and makes me wonder if in our haste we have forgotten him. All other classes of workers have some organization to look after their welfare. In this land of surprises some of the hired men appear to be getting a "square deal." The young man who delivers my milk gets $90 per month, the man who spades the gardens, forty cents per hour. Household help is still higher priced, the women receiving quite as much for like services as the men. However, there are vast numbers of ranch hands and track-menders who receive only ten cents per hour with board or fifteen cents without and who live in quarters quite unsuited to develop cleanliness, preserve health or promote good citizenship.

As I sit back and observe the struggle for wealth and the rush for pleasure I rejoice that my early pioneer life kept me on the even tenor of my way.

1148 Bryant St.
NOTES ON A NATIONAL FOREST

By C. P. Willis

Forest Assistant, Forest Service, U. S. Dept. of Agriculture

A traveller, boastful rather than truthful, and not too highly educated, had been recounting adventures in out of the way places. He stated that he had seen every part of the United States. A skeptical bystander dryly inquired whether he had ever been through algebra. "Certainly, and the number of cattle on the plains near there surprised me,"

tlers discovered the great fertility of the soil, and the wonderful transformation water artificially applied would effect. Through irrigation desolate reaches of sage brush have given way to valuable orchards, producing apples and other fruit of exceptional size, flavor, and coloring. When these are flowering in the spring, the wilderness assuredly appears "to have blossomed

was the unexpected reply. As a geographic name "Wenatchee" may seem to some as peculiar as "Algebra." A river, a town, and a National Forest on the eastern slopes of the Cascade Mountains in Central Washington have been thus designated, since Indians formerly spoke of the river valleys as "Wenatchee"—"The Outlet from the Hills."

The lower Wenatchee Valley was not long ago a desert. The first set-

like the rose." Rapidly as this section has developed, and the apple crop alone was valued at $3,000,000 in 1910, it is generally conceded that the future growth, both in fruit production and in population, will greatly exceed that of the past.

The Wenatchee National Forest partially encloses the orchard region and extends from near the Columbia River to the summit of the Cascades. Its exterior boundaries embrace an
area almost double that of the State of Rhode Island, though part of the land thus included is privately owned. Timber from within the Forest, but not from government land, has been cut extensively and shipped east in large quantities. Lumber sawed here has been used in constructing a house in Massachusetts. Wenatchee apples have reached every continent on the globe. Since these are almost invariably packed in boxes manufactured locally, wood from within the

Forest boundaries has literally been shipped “to the ends of the earth.”

It is, however, improbable that much lumber from the Wenatchee Forest proper—from government land—will seek an eastern market. The practice of forestry differs from the usual management of private timber holdings. With the latter, the prime object is to secure the largest possible immediate return, and hence all merchantable timber, representing the accumulated growth of centuries, is logged as rapidly as feasible. Lumber for export is thus obtained, but to possible annual cut will increase as scientific management increases the production, but there is nevertheless, little prospect of a surplus over the amount of timber needed locally being supplied by the Wenatchee Forest. Within few years the wood consumption in the Wenatchee Valley alone will doubtless equal the production of the Forest. It will be largely through the prosperity of this Valley, that the people as a whole will benefit from the practice of forestry on the Wenatchee Forest.

The mere holding or “reserving” of
timber is almost as distinct from the practice of forestry as is logging without regard to future growth. Forestry has been defined as the "perpetuation of forests by wise use." From an economic standpoint it is obviously very important that a forest be used. It is likewise advisable from a silvicultural point of view that cutting of timber proceed. In a virgin forest, the deterioration of the stand balances its improvement, the growth is offset by the decay. If, however, mature timber is periodically removed, old, decadent trees are replaced by thrifty reproduction and the amount of wood grown per acre per year greatly increases. An analogy may show more clearly the difference between "reserving" timber and practicing forestry. A man, possessing a sum of money, may hoard it. So doing, he gains nothing. This represents the forest not used. On the other hand, the man may wisely invest his money. In this way, he not only secures interest but may also increase his capital. Similarly, where forestry is practiced, interest in the form of the annual timber cut is secured. The removal of hypermature trees, which are replaced by rapidly growing younger ones, results in an increased wood production, and the "capital value" the measure of the earning power—proportionately increases.

From the above considerations, it is evident that it would be advisable to cut each year from the Wenatchee Forest the amount of timber which annually grows. However, this is unfortunately impossible at the present time, owing to economic conditions of a local nature. There are great quantities of privately owned timber near and within the Forest boundaries and much of this must be logged before the government timber will be very greatly in demand. A beginning in logging on Forest lands has however been made and the annual cut will doubtless steadily increase until the production of the Forest is each year logged.

A beginning has likewise been made on this Forest in restocking areas at present unproductive, but capable of growing timber. The past fall tree seeds were sown on one hundred acres on a mountain slope where fire had totally destroyed the forest. This work will probably be pursued on a larger scale in the future.

In accordance with the governmental policy of making the best use—the fullest and the most lasting use—of natural resources, more than forestry must be considered in National Forest management. For example, there are extensive portions of the Wenatchee Forest where valuable forage exists. To utilize this, sheep are permitted to graze on government land during the summer months. When the Forest was created, there were included in it many isolated tracts of fertile land, more valuable for agriculture than for forest purposes. These have gradually been opened to settlement and are now, to considerable extent, under cultivation. There are not a few mines within the Wenatchee Forest, and the location and the working of these is encouraged. Water, a very important resource, is likewise utilized—for domestic purposes, for irrigation, for the generation of electricity—and only such restrictions are imposed by the government as are necessary to protect the interests of the public.

With an area as large as that within the Wenatchee, and with conditions in different portions as diverse as they are, the work of Forest officers must needs be varied. It has to do with timber sales and forest planting, with the supervision of grazing and other privileges allowed on government land, with the building of trails, cabins, and other improvements, with the protection of the Forest from fire, and with numerous other activities. The local force consists of a supervisor, a deputy supervisor, a forest assistant, a grazing assistant, and a clerk—who have general work—and a body of rangers, and their temporary assistants, guards—each of whom is assigned to a certain district in the Forest.

All the Forest is mountainous, but most of it can be reached in some way on horseback. Practically all the
men, therefore, own horses, and most of them have one horse for riding and one for "packing" camp equipment. It is largely through the use of the latter that any degree of comfort can be assured on the frequent extended trips through the mountains Forest officers must make. The usual pack consists of food in reasonable quantity and variety, cooking utensils, and blankets, with such other articles as tents, instruments, and tools, according to the desires of the traveller or the nature of his work.

Better maps than previously could be prepared are now being made of the amount, character, and distribution of the timber on the Forest. This work requires that the very inaccessible as well as the easily reached portions of the Forest be covered. Where the country is exceedingly rough, or where the density of the timber renders horse pasturage very scarce, it is necessary to travel on foot. In this case supplies must be "packed" upon the back of the traveller, and if long trips are to be made, only the equipment absolutely essential can be carried. Even where the minimum amount is taken, the pack, including food, blankets, a tarpaulin, a few cooking utensils and tools or instruments, commonly amounts to sixty pounds when a ten day or two week trip is proposed. Where walking would be difficult even were a man unburdened, there is slight danger of the weight of a sixty pound pack being unappreciated at the end of a long day's tramp.

One most important duty of Forest officers is the protection of the woods from fire. The fighting of fire often entails severe and long sustained labor with a liberal admixture of anxiety and discouragement. It is seldom feasible to actually extinguish a fire, but it is aimed to prevent its spread, to confine the damage to the smallest possible area. This is done in a variety of ways. No two fires are precisely alike, and differing conditions call for different measures. A "fire break" or "fire line"—a strip cleared of inflammable surface material—and under other conditions, a trench dug through the peaty soil to the mineral soil, are commonly used to check the spread of fires.

A story is told of a Forest ranger who, falling asleep one night in camp, dreamed. His first sensation was of falling through utter darkness for an unconscionable time. He then seemed to stand before a massive gate, which almost immediately swung open, dis-
closing a country he had no difficulty in recognizing as The Abode of His Satanic Majesty. The ranger turned to flee, but a gigantic fiend, suddenly appearing, flung him headlong within the gate. As the unwilling visitor slowly rose to his feet, he beheld a sight which somehow struck him as familiar. A vast fire lit up the scene and cast a terrible heat. Separated from the blaze by only a narrow open strip was a mountain of very inflammable material, to which, as he saw at a glance, the flames would soon spread. Around were multitudes of Shades of Former Men, apathetic and dejected. Before the ranger had gained his feet, he had collected his wits, and, remembering his past, had decided upon a course of action. A mighty yell from him attracted the attention of many Shades standing near. They flocked curiously about him while he briefly explained that he had been a Forest ranger on earth, knew all about fighting fire, and would insure their future comfort if they would implicitly obey him. Many instantly agreed, and he set them to work widening the space between the fire and the endangered mountain. Others joined the workers. For seeming ages the ranger labored, directing the Shades. From being a remote possibility, success in his difficult undertaking, became more certain. Finally came a moment when the ranger heaved a deep sigh of relief and stood aside to triumph in his victory—the fire could in no possible way reach the mountain, but must certainly if gradually die out completely from lack of fuel. The climate of the surrounding region would become, not only bearable, but agreeable. Suddenly a fearful tumult arose, the ground rocked beneath his feet, the mountain tumbled into the fire, and the ranger—awoke.

WOMEN IN DOMESTIC SCIENCE

By Mildred Dudley, '12

The question has often been asked, "Why does Cornell University name its course in home training, Home Economics, while other colleges have the same course known as Domestic Science?"

A general name, simple yet comprehensive enough to cover sanitation, cooking and kindred household arts, and instruction in the art or science of living from the kindergarten to the college, was not an easy thing to find. After a long discussion there was agreement on the name "Home Economics" as the title preferable for the whole subject, and it was determined to consider it as a distinct section of the general subject of economics, so that it should find a logical place in the college and university course and not be confused with the mere "Household Arts" often taught under larger names. The latter, however important practically for the general public, could never expect to be recognized as a part of the University curriculum. While home economics was taken as a general term, it may be wise to use other phrases for its subdivisions; domestic economy might be appropriate for lessons for the younger pupils; domestic science might be applied in high schools where foods and house sanitation can be studied by scientific methods, while household or home economics would be suitable for a college course. This, then, is the reason why the New York State College of Agriculture names its course in home training "Home Economics".

Now that we see the full significance of the name let us turn our attention to its work and first of all to the preliminary work necessary. To register in the course the student must have the standard requirements, the same as for the College of Arts and Sciences. The freshman and sophomore years are almost wholly devoted to such subjects as English, drawing, biology,
botany, physiology, chemistry, physics and the like. These subjects are required and lay the foundation for the home economics proper. As for example, the courses in physiology and sanitary science, give instruction in the prevention of disease; also some instruction in home nursing and care of the sick. Chemistry plays an important part in the combination of foods and their care, while physics deals with the heating and lighting and mechanical appliances in the home. Drawing finds its application in home decoration, in planning houses and furniture. Botany and biology are exceedingly important in that they give the history of life, from the simplest to the most complex. When one comes to realize that the human body is composed of tiny microscopic cells all working together for a common good, yet each cell requiring proper nourishment to function properly, it gives us a new idea of life and its care. The science of home economics is very vital; perhaps people have not been thinking of it in that light, nevertheless it affects all people and generations of people perhaps more than any one thing. If the race is not properly fed, can it expect to have strong, healthy offspring?

Agriculture and home economics go hand in hand. Everybody admits agriculture is a vital subject because it deals with the production of the raw material; home economics on the other hand, deals with its care and preparation. It would seem that one is as important as the other, because many a good product is destroyed by unintelligent preparation.

The College of Agriculture trains its sons for scientific farming. Has it not equal responsibility then, in training its daughters to make the home a center of strength and healthful efficiency? The Department of Home Economics does this by training the girls not only to care for the food produced but to care for the health of those producing it.

If you were to visit some of the various classes in the College of Agriculture you would find that the men are quite concerned with the amount of potassium and phosphorus in the soil, and also the amount of protein and carbohydrates given their cows and pigs every meal. But is it not strange they never stop and think that the human animal needs like consideration? We know that our meals should contain all the various named foods in certain proportions, yet we are quite satisfied with any combination and preparation that the housewife chooses to set before us, provided of course that it is half way palatable. The welfare of the individual surely is of as much importance as the welfare of the crops or animals and this welfare depends in a large part upon the intelligent knowledge the women apply to the problems of the household.

Recent examinations of school children in various cities have revealed a state of physical ill-being most deplorable. Nutrition, which is an exceedingly important subject to the student, is always the first point of inquiry in such cases, because it is indicative to all other functions of the body. Many a child is punished for laziness, nervousness and irritability who really ought to be merely 'nourished' into energy and good temper. Strong tea or coffee for breakfast with perhaps a bun from the bakery, will not correct these difficulties nor is it the meal to be set before a child of the future. Home economics is beginning to have too strong a hold on the people to let this kind of a diet continue many more years.

People are ill nourished sometimes because of lack of means, but more often because of ignorance. A tender porterhouse steak needs little time or skill in preparation for the table, but its cost is far above the average income of the large family, while a scrag end of beef, with greater food value than the steak, could be well afforded; but it is often not used. Why? Because it requires most careful cook-
ing by one who understands the principles of meat cookery. Nevertheless, it is safe to say that this scrap of beef would cost no more and would be much more satisfying, to say nothing of its nourishing qualities, as compared with the bun, cinnamon rolls and the like, which the uninformed mass of people live on. This very sort of living makes the people poor because they are unable both physically and mentally to compete with the better nourished man.

The care and preparation of food to the student of home economics, while essential, is not the most important consideration. The science has to do with more vital subjects, one of which is nutrition above illustrated. Others which are of equal importance to the country and nation are the problems of extravagance, cleanliness of homes, markets, streets and cities, and the proper dress and shelter of our people. The one problem, which is greater than all these, is the problem of improving the present situation of society and the future of the race. Home economics cannot change this at once, nor it cannot change it directly, but it will be accomplished by the proper education of the homemaker and her influence upon the children.

At the present time many of our women are too narrow in their views for the well being of society at large. Country women are said to be hemmed in by the four walls of their domain, while their city sisters on the other hand are said to be too much interested in unproductive labor. Be this as it is, education will prove the remedy by making better and more delightful, comfortable homes. By making them full of life, beauty, simplicity and interest, it encourages higher education and broader views, consequently a better read nation; thus better citizens. We want not only to have a citizenship in this country that is free from disease, but one that is positively strong and vigorous and prepared for the severe tests that the twentieth century is going to put upon our bodies.

Housekeeping in the widest sense, is the provision of domestic comfort within the home. It is the largest single industry known, for what is there that does not in some way pertain to the household? Practically nothing! It is now becoming an accepted fact that to be born a woman is not as it once was, to be born a homemaker. Therefore, the girl in the family needs the wisest training possible to fit her for the responsible position which she is bound to hold in society, whether she realizes it or not. It has been said that the nation can never rise higher than its women. Therefore, let us educate our girls for their appointed field.

TENTH ANNUAL MEETING OF THE NEW YORK STATE FRUIT GROWERS’ ASSOCIATION

By A. H. White, ’12

ROCHESTER proved to be the center of attraction for the fruit-growers of New York during the 4th, 5th, and 6th of January, ’11, at which time the New York State Fruit Growers’ Association held their tenth annual meeting. Not only was it the most largely attended, but it was also the most successful meeting yet held. The fruit-show and the exhibits of orchard machinery proved to be features of the convention.

President Case, who was in Florida at the time, sent on his speech which contained an interesting comparison between the orchards of Florida and those of New York. In part it read: “I have been watching groves of oranges and grape fruit in Florida, comparing them with fruit orchards in
New York State, and find that one of the greatest necessities is the same in both places—the need of more humus and lime in the soil. I am more than ever convinced that the central and western portions of New York State are the most favored fruit sections of the world.’’

Then followed a three day program of speeches and “question boxes,” all concerning fruit work. Among those who spoke were Prof. P. J. Parrott, Ent. at the Geneva Experiment Station; Mr. C. E. Bassett, Sec. Mich. State Hort. Society; Prof. Samuel Fraser; and from Cornell: Prof. H. H. Whetzel, Prof. C. S. Wilson, Prof. E. O. Fippin, Asst. Prof. Donald Reddick, and Mr. E. Wallace.

Perhaps the most important occurrence was the announcement that a big apple show would be held in Rochester next September. The event will be the largest event of its kind ever held in this State and it is expected to eclipse the great apple show held in Canada last fall. The main object of this move is to educate the people in the handling and use of apples and fruits generally, and indirectly to boost New York State fruit, and to prove that all the good fruit does not come from the west. All apple products and all orchard machinery will be represented, and the exhibits are to be made on a grand scale, from carload shipments down to individual specimens of fruit. Educational features will play a prominent part, and it is expected that Cornell will furnish packing, and also cooking demonstrations. The money with which to defray the expenses, about $10,000, is now being raised.

In the exhibition rooms this year, besides the various exhibits of nursery stock, fungicides, insecticides, sundry articles of the fruit grower’s equipment, etc., there was a continuous demonstration of box packing of apples by the Cornell Department of Pomology. A special device used to assist in the boxing attracted considerable attention, and a circular was passed out showing detailed construction. The latest things in orchard machinery was shown in the basement, and the high powered gasoline tractors which are a development of the last decade tend to show the advancement being made in the field of fruit growing.

Over eight hundred attended the second annual banquet of the Association, which was in every sense a grand success. Dean Bailey was toastmaster, and in a short address told of the advantages of New York State as a fruit growing region, and pointed out that it was not the land but the people which was the all-important factor in fruit-growing.

An important piece of legislation was agreed on when delegates from several states resolved themselves into a committee to send into Congress a resolution to the effect that in the bill regarding the standardization of grades, packages, etc., the clause stating the size of box to be used should be dropped out in order that western and eastern fruit growers might come together and the bill put through.

**The New Officers**

The election of officers made in the old informal way of the sister society (Western New York Horticultural), resulted as follows: Clark Allis, Medina, N. Y., president; Samuel Fraser, Geneseo, N. Y., first vice-president; Luther Collomer, Hilton, N. Y., second vice-president; C. S. Wilson, Ithaca, N. Y., third vice-president; C. H. McClew, Burt, N. Y., fourth vice-president, and E. C. Gillette, Penn Yan, N. Y., secretary-treasurer. The executive committee remains as for the last year—namely, Frank Bradley Barker, N. Y.; L. L. Morrell, Kinderhook, N. Y.; Charles G. Porter, Albion, N. Y.; W. Ray Teats, Williamson, N. Y., and Eugene Collomer, Hilton, N. Y.
BEE KEEPING

By An Amateur

BEE-KEEPING on a large scale is a branch of farming that should only be undertaken by men or women who are fully trained to do the required work and who live in sections of the country where there is a good honey flow. Such persons can usually make as good a living by bee-keeping as by other branches of farming. In the southern part of New York State from November to March or in the colder parts of the State to April, the bee-keeper has generally little to do with the bees. This time is often used for painting hives, getting bee supplies ready for spring, and other similar chores. For this reason, poultry or orcharding fit in well with bee-keeping.

I am not writing, however, for bee-keepers on a large scale, they could not learn anything from me, but I pen this short article for amateurs or for farmers who may wish to keep a few hives to raise honey for their personal use, and to derive both pleasure and benefit thereby.

The word “keeping” in bee-keeping nomenclature has in addition to its agricultural meaning also the strictest literal significance. Cattle may be kept in enclosures, poultry if it is not desirable to have such at large can be kept behind poultrywire, sheep and hogs can be kept in similar ways. But bees have to fly far to gather honey and you could not keep them in their hives even if you fed them.

The natural instinct of starting a new family makes bees swarm in spring or early summer and it is at this point that the “keeping” is essential. To the observer, they give notice that they want to move. If we put the nicest bee-house near their hive they may not accept our invitation to occupy this new house, rent free because the bees have their own notions about which they won’t tell us. The observer knowing all this puts the new house in order with frames that he may have left over from previous years, or else with new frames and “foundation.” “Foundation” is a sheet of wax on which the size of the worker cells has been stamped and such sheets are imbedded in the new frames.

As soon as the swarm leaves the old hive it begins to go to a tree or bush in the immediate neighborhood likely to assemble all the deserters. The bees start a roar just like boys after playing a successful trick on somebody and the bee-keeper if he is not deaf will hear them. Now is his opportunity. He goes there with a basket, or a box, or a pail, or a burlap bag and tries to put the bees in, they can’t sting now as they have filled their stomachs so full of honey that the bending of their bodies hurts them, for when they sting they have to bend their abdomen.

If the swarm is on a twig that can easily be cut with pruning shears it may be best to cut and to carry it over to the new hive. If it cannot easily be cut the bees can be shaken into a box or something else and taken to a hive. No bee-veil and no gloves will be needed, but for a beginner a veil might be advisable as he will not then become nervous if some of the bees fly around his face. After having secured the bees shake them gently in front of the new hive. The alighting board must be so adjusted that the bees can crawl up easily. Or take the box and set it on the new hive, the open part of the box downward on the open hive. You may throw burlap or other material over it so that the bees have to go through the hive if they want to get away. But in most cases they will be contented and in a short while they will settle down to business. To facilitate this it is advisable to put in a frame of “brood” partly unsealed as by this means the bees find work at once and forget their troubles. Naturally the queen has to be there or else you will find an empty
hive the next morning. After the bees are down in the hive, take the box away and cover the hive. The old hive has some bees and brood left, mostly nurse bees and one or more virgin queens and these latter ones are apt to swarm also and take away with them more bees. Therefore, the beekeeper may do well to get rid of the surplus virgins and leave only one as the new queen.

There are many difficulties one has to overcome to accomplish this, which will not be mentioned here as it would extend our short article too greatly. We have now two hives and if the old one is in good shape and the honey flow is good we may expect a fair surplus from the old hive.

Our new hive if filled with old frames will go to business at once as the queen will start without much delay to lay eggs. The scientists tell us that she lays three thousand or more eggs a day if she gets busy and if there is plenty of honey for the colony in sight. I never counted them, in fact, it took me quite a while to find the eggs when less than three days old and I was afraid that these small things might catch cold so I put back the frames quickly after seeing the white specks. Three days after you may find grubs and eggs and the bees won't sting you if you handle them right.

The explanation of the word "right," however, takes too much space for the limit our editors accord us. So you will have to read the bee-books and find out for yourselves if you wish to start in bee-keeping.

Besides swarming in order to start a new family bees swarm if they are short of honey, or unusually disturbed and it is of a certain disturbance that I wish to write.

The season of 1910 was an excessively dry one. The beginning was the best one could have wished, there was plenty of pollen, which is needed for the babies as honey alone would be too strong for them and then came a fine flow of white clover nectar. The bees were kept busy which is the best thing to keep them from stinging. The queen industriously laid eggs and as you need 50,000 or more bees in a hive and during the busy season they live only from four to six weeks you see that her majesty cannot be lazy. The bees know it and take from her all care of nursing the babies and not only that but also the care of feeding and cleansing the queen. They brush her, and cover her, and feed her with a specially prepared food which it is claimed is partly a product of the
The Cornell Countryman

HIVE WITH SOME OF THE FRAMES REMOVED
Courtesy of A. I. Root Co.

brain of the worker bees. As stated above the queen kept busy, there were plenty of bees and considerable honey came in, but in addition to the honey there came something else, the bee-moth or wax-moth. If you have once seen a comb in which Madam Wax-moth has lately deposited eggs you won’t forget it if you are interested in the bee business. As I said the wax-moth, or let us say wax-moths, came without my knowing it and as I had to be away for a fortnight I could not watch the bees. They had over thirty pounds of sealed and unsealed honey in the “supers.” The broodframes had their full quota and I felt as proud as a peacock on account of the management of my pet hive.

The bees were as gentle as bees can be and when I looked in just before I left for two weeks they were as unconcerned as they had been the whole season. During 1910, I received only a few stings some of which I get every year and generally do not mind them, though some I have minded, but that is another story.

After returning from my trip (it was evening and a little stormy) I went at once to see what the bees were doing. I did not see any outside and concluded they must have gone to bed early. Next morning I was up before them, at least I thought so, because they were not flying and I did not care to disturb the bees by opening the hive as it was cool. After breakfast, however, the sun shining briskly, I opened the hive and found no bees and no honey but instead wax-moths in all stages of growth. The bees had swarmed late in the season on account of this disturbance and they had moved to a hollow tree and stolen every drop of honey and there was yet the fall season before me with its golden rod, buckwheat, and aster honey to come.

So you see there is a difference between being a keeper of bees and a bee-keeper. This short absence cost me sixty pounds of honey including that which I usually get from the fall flow. If buckwheat is good I would even expect more.

If I had been present when the bees swarmed I would have managed it as described above and allowed them to carry back their own honey to the new hive which they are only too willing to do.

Bee-keepers like other farmers depend on seasons and it seems to me that there are no two seasons alike, but even if in some seasons the farmer should not receive much honey, his orchards, his grain, his garden, and his meadows are surely benefited by the bees in properly pollenizing the different plants. If good hives are used nearly every year some surplus honey can be gathered and I have found very few people who did not welcome this surplus.
LIVE STOCK INSTITUTE
Department of Animal Husbandry

PROGRAM

Monday, February 20th.
9:00 A.M. Lecture—Treatment of Cows before, during and after parturition. Prof. H. H. Wing.
9:00 A.M. Lecture—Feeds and Feeding. Prof. E. S. Savage.
2:00-4:00 P.M. Regular Judging Practice, Judging Pavilion.
8:00 P.M. Regular Meeting of Round-Up Club. Talks by students.

Tuesday, February 21st.
10:00 A.M. Lecture on Horse Production. Prof. M. W. Harper.
11:00 A.M. Lecture, Breeds and Breeding. Prof. H. H. Wing.
2:00 P.M. Horse Demonstration and Judging. Prof. M. W. Harper, Judging Pavilion.
8:00 P.M. Round Table on Swine Production. Discussion led by Hon. C. J. Huson.

Wednesday, February 22d.
9:00 A.M. Lecture, Treatment of Cows before, during and after parturition. Prof. H. H. Wing.
9:00 A.M. Lecture, Outlook for Horse Production. Prof. M. W. Harper.
2:00-4:00 P.M.—Cow Judging Contest and demonstration. Open to all Farmers’ Week visitors. No students can compete.
4:00 P.M. Round Table on Cow-testing Associations. A. J. Nicol.
8:00 P.M. Informal Livestock discussion. Animal Husbandry Building.

Thursday, February 23d.
10:00 A.M. Lecture, Outlook for Horse Breeding in New York. Prof. M. W. Harper.
11:00 A.M. Lecture, Breeds and Breeding. Prof. H. H. Wing.
2:00-5:00 P.M. Meat Demonstration: Beef, Pork and Hot-house lambs.
8:00 P.M. Address, Prof. C. S. Plumb of Ohio State College of Agriculture. Address, Business prospects and opportunities of Livestock breeders. E. A. Powell, Syracuse, N. Y.

Friday, February 24th.
9:00 A.M. Lecture, Treatment of Cows before, during and after parturition. Prof. H. H. Wing.
10:00 A.M. Lecture, Care and Management of the Work Horse. Prof. M. W. Harper.
2:00 P.M. Auction Sale of Livestock. Holsteins, male and female from Advanced Registry Stock; Jersey bull calves; Cheshire Swine; bred sows, boar and sow pigs.

NEW YORK PLANT BREEDERS’ ASSOCIATION

PROGRAM

Wednesday, February 22nd.
9:00 A.M. Dr. H. J. Webber—Breeding of Timothy.
10:00 A.M. Dr. H. H. Love—The Breeding of Corn with Special Reference to New York Conditions.
11:20 A.M. Mr. A. J. Nicol, Delhi, New York—Some Plant-Breeding Results on the Delaware County Farm.

At 2:00 P.M.
2:00 P.M. Dr. A. W. Gilbert—Breeding of Potatoes by Hill Selection.
2:40 P.M. Mr. T. E. Martin, Superintendent, New York Central Demonstration Farms, Syracuse, N. Y.—Potato Breeding.
4:15 P.M. Mr. G. Arnold, (James Vick’s Sons Seed Co.), Rochester, N. Y.—Improving Asters by Selection, Some of the Details.

At 8:00 P.M.
Director L. H. Bailey—The Outlook for Breeding.
Dr. H. J. Webber—Selection in Breeding, Hon. W. M. Hays, Assistant Secretary of Agriculture, Washington, D. C.—The Organization of Breeding.

Thursday, February 23d.
9:00 A.M. Professor U. P. Hedrick, New York State Experiment Station, Geneva, N. Y.—The Breeding of Fruits.
10:00 A.M. Mr. Samuel Fraser, Geneseo, N. Y.—Propagation of Selected Types of Apples.
10:30 A.M. Mr. Herbert P. King, Trumansburg, N. Y.—Propagation of Selected Types of Peaches.
10:50 A.M. Dr. Robert T. Morris, New York City.—The Breeding of Nut Trees.
11:15 A.M. Mr. C. E. Leighty, Cornell University—Breeding for Resistance to Disease.

At 2:00 P.M.
2:00 P.M. BUSINESS MEETING. Called for the election of Officers and for the transaction of other important business.

An interesting and instructive plant-breeding exhibit is being prepared. Everyone interested in plant-breeding is requested to make additions to it.
The Cornell Countryman

S. G. JUDD, Editor
W. G. STEPHENSON --- Alumni Notes Editor
W. H. FRIES
D. G. WOOLF
A. H. WHITE
M. H. McCLEW
C. F. RIBSAM
G. M. BUTLER
B. P. JONES
W. DE S. WILSON

Associate Editors
Business Manager
Assistant Managers

FEBRUARY, 1911

A Spraying Number

It has seemed to us that spraying was a sufficiently important part of agricultural practice to deserve a special issue. Therefore, this "Spraying Number."

It is commonly remarked, "For every crop that grows there is some pest to hinder its growth or destroy it entirely.

Among these pests are various insects, fungous diseases, and our common farm weeds. For a long time the control of these has been a matter of study and experimentation among scientific investigators and practical farmers. Great progress has been made.

We can now say that for most of these pests we have a means of control, and for many practical extermination. The method of warfare in most cases is spraying. Effective spraying solutions have been compounded and successful machines for their application invented.

Articles on Spraying by men eminently fitted to discuss this problem, because they have obtained definite results by spraying not only orchards but farm weeds as well; together with articles on spraying machinery; comprise the major part of this issue. These articles merit the appreciation and serious consideration of our readers.

During the week of February 20—25th our College will be the Mecca of New York State farmers who come here primarily to get instruction in better methods of farming. The College is glad to have the citizens of the State look over this institution, which is their own, and see for themselves the work that it is carrying on.

The people who come to Cornell for this annual farmers' convention do not come here to criticize—they are not that kind of folks. But rather they recognize the fact that one is never too old to learn and appreciate that a staff of trained investigators, such as the faculty of this College, is sure to discover principles and methods which if put into practice by farmers will better the farms of the State and the people on the farms.

However, instruction in agriculture is not the only benefit our visitors will receive. They will get inspiration to live better, fuller lives on their own farms and to take an active part in the campaign for the betterment of country life. To hear Dean Bailey and to come in contact with him is a constant source of inspiration to every one of us who are students here. In the same way will our Farmers' Week guests be inspired.

There is another viewpoint. By mingling with the crowds that will
visit us from February 20–25th and talking with these people who daily wrestle with the problems of practical farming the students can very greatly increase their fund of agricultural wisdom. Aside from that, many lasting friendships can be formed. We urge the students to exert every effort to make our guests feel they are truly welcome. The gain will be mutual.

Speaking for the faculty and student body the Cornell Countryman extends to all those who visit us during Farmers' Week the welcome of the College of Agriculture.

Again Cornell students have triumphed in judging. This time the Poultry men received the laurels. The Students’ Judging Contest held at the recent Poultry Show at Boston was won by the Cornell team, E. W. Benjamin, '11, and O. B. Kent, '12, Teams from three agricultural colleges competed.

The Cornell Countryman congratulates these men on their victory.

In order to publish this number the paper cannot be sent to press until after February 25th. This means that the March issue will be somewhat late in coming out. We ask our readers to be patient as we think the material possible to be included in this Farmers' Week issue will be well worth the delay necessary for its publication.

Most of the students know that this College includes a Department of Home Economics. However, very few of the students and fewer people outside the college circle know much of the nature of the work which this Department conducts. In this issue Miss Dudley, a junior in Home Economics, clearly points out some of the reasons why young women study Home Economics.

That instruction in Home Economics is important was demonstrated last spring by the appropriation of funds by the State Legislature to build a five story building at Cornell University to house the Department of Home Economics.

For considerable time the colleges have been instructing young men in animal and plant nutrition and in farm management. Only recently has instruction been given to young women in human nutrition and management of the home. This latter result the Department of Home Economics is accomplishing. Is it not a worthy purpose and vital to the development of a nation? The rapid growth and ever increasing recognition of this Department justifies its existence as part of a great University and is a tribute to the members of its staff.
THE Farmers’ Week at the Pennsylvania State College was held Dec. 19-24. It proved to be one of the most successful Farmers’ Weeks that was ever held at the College. Aside from the lecture and demonstration work, a number of the departments had very creditable exhibits. One of these exhibits that attracted a great deal of attention, was that of the dressed poultry and eggs.

Prior to this time, the Division of Poultry Husbandry had been making a test on fattening poultry. There were ten lots of birds used in this test. They were as near one age and size as was possible to have them. A number of different kinds of feeds were used, and the birds were fed by different methods. The purpose of this work was to show the farmer and poultryman what results could be obtained by using different feeds.

At the beginning of Farmers’ Week, these lots of birds were killed, dry-picked and placed on exhibition. If the farmers are to receive the best and top-notch prices for their product, they must comply with the demands of those who purchase it. The highest-grade market makes it imperative that fowls should be neatly dressed; that the package must be neat and clean and that the product must be of blue-ribbon quality, for competition is keen.

In the east, farm poultry is generally sold without being fattened; much of it is in poor condition and therefore does not command the prices that it should. It may be sold to the consumer direct, but the major portion is sold to the wholesale houses and handled by commission men. In the west, most of the farm poultry is sent to the feeding station, where a special process of fattening is practiced and the quality of the birds is greatly improved. Some, however, is sent alive to the eastern markets.

It is important to have strong, vigorous birds to produce our market stock. They should be uniform in size and have well developed bodies. Mongrel stock should be eliminated from the farm and replaced with pure bred stock. They will be more uniform in size, color and quality.

Poultry should be starved for twenty-four hours before being killed. They should have all the water they desire to drink, as it will aid the body in getting rid of the waste products, and give a better appearance to the meat of the birds. The pens that are used to keep the poultry in should be sanitary.

Dry picking is the process of removing the feathers from poultry without the use of water. The bleeding is done through the mouth, by making one cut on the right side of the bird’s mouth. If this cut is made accurately the bleeding will be very complete. At times it is more difficult to get good bleeding than at others, because the veins do not lie in the same position in all birds. Next the brain is pierced just enough to paralyze the bird but not to kill outright. When the brain is pierced it paralyzes the feather muscles, this causes the muscles to relax and the feathers can be pulled out easily and quickly. A knife with a narrow blade about two inches long can be used for this work. The best markets demand dry picked poultry. It is of better quality and will keep better than scalded poultry. After the chicken is killed and dry picked, it is necessary to cool it properly, and this should be done gradually, by
leaving in a room of medium temperature for about 24 hours. The heads of the birds should be wrapped in white parchment paper, in order to keep the blood from getting on the bodies when they are packed in boxes for shipment; also it gives a more attractive appearance to the dressed bird. Fowls should be graded closely, the best ones being put in the same package. A box of poultry is judged by the poorest bird that it contains. The boxes should be made of 3/8" and 5/8" lumber. A box 16"x18"x8" will hold one dozen birds that will weigh from four to five pounds each, in two layers of six each. The heads and feet are so folded as to be in the center of the box. The object in doing this is to have a more attractive package, for an attractive package makes many sales. No matter whether the top or bottom of the box is opened, the appearance will be the same.

For the exhibit, part of the poultry was packed in this way, while several lots of birds were arranged on shelves. A card was placed with each lot giving the following data: Pen No—Kind of feed used—Method of feeding—Gain in pounds for the entire period—Cost per pound gain. This gave the observer a chance to see what feed was used and the method used in feeding. They could see which feed produced the best birds at the lowest price. At the close of the week the birds were shipped to a dealer in New York City.

There was also a good collection of eggs, which were representative of the most important breeds of poultry. There were a number of plates from the different breeds kept at the College Plant. Poultry breeders from various parts of the state contributed largely to the exhibit. There was also a collection from a number of the breeds kept at the Poultry Department at Cornell University, which added greatly to the exhibit.
CAMPUS NOTES

The first assembly of the year was held Wednesday evening, January 4. The meeting opened with Alma Mater, followed by a selection from the Glee Club. This was followed by a piano solo by Robert E. Dent, '14.

Dean Bailey then addressed the students on the problem of soil conservation. As an illustration of the ways by which persons unacquainted with the facts would go about it to solve the problem, Dean Bailey read a bill proposed before a State Legislature. The bill provided that it would be unlawful to plant small grains or a cultivated crop on land that had been used for these crops the year before, and provided for a penalty of 10-25 cents per acre in case of violation of the law. The real solution to the problem, Dean Bailey said, lies in the education of the public to the advantages of soil conservation and in fostering a public sentiment that will forbid abuse of the soil. The soil is the greatest of our natural resources and no man has the right to abuse it.

The closing part of the address was devoted to the reading and the discussion of Edwin Markham's "The Man with the Hoe" and "The Winding Road." After closing the meeting with the Evening Song a social hour was enjoyed.


Monday evening, Dec. 19, Mr. F. S. Peer gave a very interesting talk on English Live Stock before the Round-Up Club. Mr. Peer is an importer of English live stock and is the author of two books on live stock subjects.

Thursday, Jan. 12, Prof. H. H. Wing delivered a lecture before the Michigan Breeders Association, at Lansing, Mich. He talked on the improvement of Holstein cows, in the light of Advanced Registry Records.

Prof. Stocking talked to the patrons of a creamery at Oswego on the value of Cow Testing Associations. It is probable that an Association will be formed in the near future.

Dr. Webber spoke before the New York State Breeders' Association at Syracuse on Jan. 11.

Several of the Departments sent exhibits to the National Corn Show which was held at Columbus, Ohio, early in February. The different Departments will be represented by Dr. Webber, Dr. Love, Dr. Gilbert, and Prof. Fippin.
During Farmers' Week, there will be an address by Prof. W. H. Day of the Ontario Agricultural College, on "State Aid to Land Drainage." Mr. Williams of the U. S. Dept. of Agriculture will speak on "Irrigation in Humid Climates."

* * *

The Cornell Poultry Judging Team, consisting of O. B. Kent and E. W. Benjamin, carried off first honors at the Boston Poultry Show in judging Fancy Poultry. The standing of the teams was as follows: Cornell, first; Ontario Agricultural College, second, and Maine Agricultural College, third. The birds to be judged were: Class 1, Five White Leghorn Hens; Class 2, Five Barred Plymouth Rock, Cocks; Class 3, Five Buff Orpington Cockerels.

Fifteen minutes were given for judging each class and the writing of the reasons for placing the birds. Two men were on each contesting team and after the birds had been placed, by the individual men, they were placed by a squad of competent judges. The placements and the reasons of the members of each team were then gone over by the judges and the scores averaged together to give the final team score. The placements of the birds and the reasons for placements were given equal value in computing the scores.

Cornell's good lead was materially increased by the fact that both members of the team noted a disqualification on one of the birds which was unnoticed by all the other contestants.

The first prize awarded by the Boston Show was $10 cash the second prize, $5. A second contest in judging utility stock was also carried on and in this contest Cornell was awarded second prize. The prizes here were ribbons to the first and second teams.

The interest in the student contests was very strong at the Boston Show and arrangements are being made for a continuance of the contests on a much enlarged plan, in following years. The Boston Show is coming to be one of the most popular shows in the country. A committee is to be appointed at once to take charge of this event next year.

The judging team was chosen by competition among the members of the class in Advanced Poultry Judging. The team left Ithaca on Monday evening, Jan. 9, and returned to the Rochester Show from Boston, Thursday, Jan. 12. The trip was enjoyed throughout and some valuable data upon the condition of the egg market in Boston was obtained by Mr. Benjamin.

* * *

The American Plant Pathologists have recently formed an organization known as the American Phytopathological Society. They will publish a journal the official organ of the Society, to be known as Phytopathology. It will be published from Ithaca. The editorial board consists of: Dr. L. R. Jones, University of Wisconsin; Prof. C. I. Shear, U. S. D. A., Washington, D. C., and Prof. H. H. Whetzel, Cornell University. Dr. Donald Reddick, Dept. of Plant Pathology, Cornell University, is business manager.

* * *

The Winter Course class in Home Economics of the New York State College of Agriculture has been as large as the capacity of the department would permit. The class numbering thirty, is taking laboratory work in foods, in sewing, cutting and fitting and daily lectures upon foods, sanitation, household management, house planning and furnishing.

* * *

For the first time the Junior and Senior banquets for the students of the New York State College of Agriculture have been served in the buildings of the College. They were prepared by the women students who are members of these classes and registered in the Department of Home Economics. Tables were spread in the long hall of the Home Economics Department. The Senior Banquet had present over
fifty, and the Junior Banquet about seventy-five members of the class.

* * *

The Homemakers’ Conference is an organization which meets at the College in connection with Farmers’ Week with a program prepared by the Home Economics Department. This organization is officered by women of the state and is a short course of one week for homemakers who wish to be in touch with the latest scientific methods of housekeeping. The program for next Farmers’ Week consists of a course of lectures upon Foods by Miss Flora Rose; one upon Household Management by Miss Martha Van Rensselaer; a course upon house planning and furnishing by Mrs. Helen Binkerd Young. These women are connected with the Department of Home Economics. In addition, Mr. Howard Riley, Professor of Farm Mechanics, will give a course upon Water Supply, Sewage Disposal, House Lighting and Heating. An Appreciation Course will be introduced; one lecture upon music in the home; another upon pictures; one upon books. Dean Bailey will give one lecture of this course upon the value of growing plants.

* * *

February 22d, is a legal holiday in the public schools, and as it occurs during Farmers’ Week, the teachers will be invited to an all day’s program in the College of Agriculture, the meetings to be conducted by Professor George P. Bristol, Dean of the Summer School, and the newly appointed Supervisor of the Education Department of the University. The main subjects of the day will be Agriculture and Domestic Science in the Public Schools.

* * *

The members of the staff of the Home Economics Department attended the New York State Teachers Association at Rochester in December. Miss Van Rensselaer is President of the State Home Economics Association which held a section meeting at this Association. Miss Rose is Secretary. Mrs. Helen Binkerd Young read a paper upon “Rational Domestic Art as Applied to House Furnishing.” Miss Van Rensselaer read a paper in the Industrial Section of the Association on “Domestic Science in the Course of Study.”

* * *

A most interesting lecture was given January 16th, in the Dairy Lecture Room by Mrs. Ware, widely known by the fame of Wareland’s Dairy Farm, Highland Lake, Massachusetts. Mrs. Ware was a pioneer in the production of clean milk and the first to send certified milk to Boston. By close application to business and by taking advantage of the methods used by those successful in the dairy industry, Mrs. Ware has built up a very profitable business. A new feature of a dairy farm is the Summer Dairy School which has been conducted during the past few summers at Warelands. Each summer this school or “camp” as Mrs. Ware calls it, grows larger. Mrs. Ware emphasized the satisfaction of putting an absolutely pure product on the market and said that the secret of success was giving your customers exactly what you said you were giving them. Miss Constable who is Mrs. Ware’s chief assistant took the short course in Dairy at Cornell last year.

* * *

In recent numbers of both the Horse World and The Horseman and Spirit of The Times have been quoted extracts from Bulletins written by Professor M. W. Harper of the Department of Animal Husbandry. The Horse World in an editorial says, “We can refer to nothing better on the ‘Care of the Driving Horse’ than a bulletin by Professor Harper.” This recognition of Professor Harper is especially gratifying because it comes from publications entirely outside of college circles. The Bulletins referred to are from a series on Horses prepared for the Farmers’ Reading Course. We advise all horsemen or
those who desire to become horsemen to obtain them.

* * *

Professor E. S. Savage recently addressed the meeting of the New York State Guernsey Breeders’ Association.

* * *

Professor John Craig, secretary of the American Pomological Society, is mailing the Report of the Thirty-First Session of that society to all parts of the United States and Canada.

* * *

Lex R. Hessler, a graduate of Wabash College, Ind., began graduate work in the Department of Plant Pathology, Jan. 1. He is holder of the Byron fellowship, established by the Byron Fruit Growers’ Association, South Byron, N. Y.

* * *

Professors H. J. Webber, H. H. Wing, and Dr. Milks represented Cornell at the convention of the New York State Breeders’ Association at Syracuse, January 11. Professor Webber spoke on “Breeding Corn and Forage Crops on New York State Farms.” Dr. Milks’ subject was “The Control of Hog Cholera.”

* * *

At the meeting of the New York Agricultural Society held at Albany, January 18 and 19, President Schurman spoke on “The Policy of Agricultural Education in New York,” while Dean Bailey discussed the development of the hill lands. Other speakers were: Governor Eberhart, of Minnesota; Governor Dix, of New York; President Brown, of the New York Central Railroad; President Creelman, of the Ontario Agricultural College; State Master Hull of the Michigan State Grange.

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At the regular meeting on January 17, the officers of the Agricultural Association for the second term were elected as follows: R. A. Mordorff, ’11, president; E. C. Auchter, ’12, vice-president; Miss M. F. Dudley, ’12, secretary, and H. B. Knapp, ’12, treasurer.

T. Bradlee, ’11, was elected to the executive committee. A vote of thanks was given to the retiring president. A gig committee of twenty members was appointed.

* * *

Forty-six students, mostly short-course students in the poultry course, went to Rochester with Professor Rogers, January 12 and 13. They attended the Rochester Poultry Show, at which the students entered the Judging and Picking Contests. The judging contest for fancy poultry was won by Mr. Kent, with Mr. Benjamin second, Mr. Masland, 3d, and Mr. Steitz, 4th. In the killing and picking contest, Mr. Brown was first, killing and dry plucking his two birds in 20 minutes and 30 seconds and leaving them in the best of condition. Mr. Lambert was second, finishing his in 19 minutes and 50 seconds and Mr. Utley third in 18 minutes, but leaving them in poorer condition.

On this trip, three important poultry farms were visited: Mrs. Hoolser’s at Geneseo; Mr. A. P. Rogers’ at Bergen, and Mr. Roy Dunn’s at West Henrietta. On Saturday, Mr. Wyckoff’s Poultry Plant at Aurora was visited.

* * *

Professor Rogers attended the Farmers’ Week in Maryland, January 16–26, and delivered three lectures. He will also attend Farmers’ Week in Maine, February 21–22.

* * *

Professor Rice was present at the Farmers’ Week of the Missouri State College, at Columbia, Mo. During the week he delivered addresses on
following subjects: "The Destiny of the Missouri Hen;" "Feeding Fowls for Egg Production;" "Rearing Chickens by Cornell Range Methods," and "Constitutional Vigor."

The Department of Poultry Husbandry is staging from one to three educational exhibits every week at poultry shows throughout the state.

The Department of Poultry Husbandry has a record breaking hen who has laid 258 eggs during the past year. Another hen is a close second with a record of 253. Fifteen selected hens have averaged 238 eggs, and a flock of twelve have laid 182 apiece.

The Department of Farm Mechanics is planning a very extensive program for Farmers’ Week. A water supply system will be set up and be in operation. Probably a farm lighting system will also be on exhibition. As a result of the tests recently completed, a large assortment of hand spray pumps tractor spraying machines, and spray nozzles will be on hand and in operation during the week.

L. A. Fuertes, ’97, talked on Birds before the Cornell Poultry Club on January 9. He imitated some of their calls and songs. A debate was held on the subject: Resolved, that the hot water pipe system of brooding is more desirable for the raising of chickens than the Cornell gasoline colony system.

In a Sanitary Science Lecture on December 20, Dean Bailey compared the health in rural and urban communities, showing the many advantages of the former, but emphasizing the need for improvement in both. He laid stress on the fact that farmers are not given to feasting late at night as in the case of the injurious city banquets.

Dean Bailey’s book, “Plant Breeding,” dealing with the amelioration of domestic plants, has recently been translated into Japanese. There is also a French translation of this book. The Chinese have asked permission of the Dean to use his books.

S. H. White, ’12, gave a talk on “Snails” before the Agassiz Club, January 5.

Prof. Whetzel spoke at the Massachusetts Horticultural Society meeting Jan. 21, on “The Local Plant Doctor.”

The Department of Pomology is putting into operation a new plan for giving assistance to fruit growers throughout the state in orchard management. The Department is to (1) Survey the Orchard; (2) Study the Soil Conditions; (3) Furnish the Owner with Plans for Fertilization and Cultivation; (4) Direct Pruning of the Trees; and (5) Give Aid in Marketing Plans. For the first year this work will be limited to a small number of orchards. The only cost to the grower will be the traveling expenses when it is necessary to visit the orchard.

One-half the students of the class in Systematic Pomology did all the judging at the New York State Fruit Growers’ Association meeting at Rochester, Jan. 3-4-5. The other half of the class judged at the Western New York Horticultural Society meeting held at Rochester, on Jan. 25-26. At the latter meeting there was also a fruit judging contest for the Winter Course students in Commercial Fruit Growing.

Mr. E. Wallace has been appointed Investigator in the Department of Plant Pathology and will study the fungicidal possibilities of sulphate of iron.

Dr. Reddick was the principal speaker at the Chautauqua Horticultural Society meeting at Northeast, Pa.
FORMER STUDENTS

WALTER MULFORD, '99
Recently appointed Professor of Forestry in the New York State College of Agriculture

Walter Mulford graduated from the College of Agriculture in 1899, with the degree of B. S. A. The two following years were spent in the New York State College of Forestry at Cornell, from which he graduated in 1901 with the degree of Forest Engineer. During the next three years he was Forester to the Connecticut Agricultural Experiment Station of New Haven, and during the same period served as State Forester of Connecticut. He also taught in the Yale Forest School in the summer term of 1902 and the fall term of 1903, and was President of the Connecticut Forestry Association from 1903 to 1905.

From July, 1904, to September, 1905, Mr. Mulford was employed in the United States Forest Service. In the fall of 1905, he went to Ann Arbor, Mich., as Assistant Professor of Forestry, in the University of Michigan. Promotion to a Junior Professorship came in the fall of 1907, a position he has held to the present time. The head of the Forestry Department at Ann Arbor is Filibert Roth, under whom Mr. Mulford was a student while in the New York State College of Forestry.

Since going to Ann Arbor, Mr. Mulford has been employed three summers by the United States Forest Service, and one summer on private forestry work. Another summer was spent in Europe in the study of forestry methods. His work has taken him into thirty-six states of the United States.

Mr. Mulford was a member of the board of editors of the Forestry Quarterly in 1903 and 1904, and from 1909 to the present time. He is a member of the Society of American Foresters and of Sigma Xi.

Mr. Mulford was married on July 1, 1903, to Vera Wandling of Ithaca. They have one child.

Mr. Mulford has been appointed Professor of Forestry in the New York State College of Agriculture. Although he does not move to Ithaca until next summer, he will spend much of the present winter at Cornell in getting the forestry work started.

'97, B. S. A.—H. G. Carrell, of the Semet Solvay Company, has been transferred from the Chicago office to the home office of the company at Syracuse, N. Y.

'Special '01-'02—Mr. H. S. Williams visited the college, Jan. 13th and 14th. Mr. Williams is the manager of the farm at the Lincoln Agricultural School, Lincolndale, N. Y. He was for two years previous to coming to Lincolndale, connected with the farms at Derry, N. H., of the H. P. Hood’s Sons of Boston, extensive milk dealers.

'04, A. B.—Mr. C. W. Howard, who is now government entomologist of Portuguese East Africa, has been granted a leave of absence and will return to the United States this summer. Mrs. Howard was Miss Anna B. Townsend, '03.

'Sp., '04—S. R. Clark writes from Onondaga Valley, N. Y., that he now
The Cornell Countryman has full responsibility for maintaining the old family homestead. We remember Clark as the kind of young man in whose hands it is safe to trust a family homestead.

'05, B. S. A.—Carol Aronovici, who is in charge of the Union Settlement House of Providence, R. I., has written an elaborate statistical monograph on "Some Nativity and Race Factors in Rhode Island," and the work has been published by the Rhode Island Bureau of Industrial Statistics as a part of its annual report for 1909.

'07, B. S. A.—Scott H. Perky and Mrs. Perky, who have spent the fall in the mountains of North Carolina, are now in Los Angeles, California, where they expect to remain for some time.

'07, B. S. A.—John B. Shepard writes from San Marcos, Texas, that he is still operating in south Texas, building irrigation works and looking after a number of farms. He expects to change his headquarters in the near future but does not yet know his next location.

'08, M. S. A.—C. F. Niven in a letter to Prof. Wilson states that since obtaining his Master's degree he has been in the North Georgia Agricultural College.

'08, B. S. A.—For the past two years C. J. Grant has been working with the Dairy Division of the Bureau of Animal Industry investigating the manufacture of cheeses in this country especially the camembert and roquefort types, the first of last January entered upon the duties of Assistant in Agronomy at the Ohio State University at Columbus, Ohio.

Sp., '09—T. M. Scoon, Geneva, writes that he put up a large barn on his farm this past summer and that he has bought a lot of steers which he is feeding this winter.

'09, Ph. D.—J. H. Squires has recently been promoted and is now head of the Department of Agronomy in the New Mexico Agricultural College.

'09, B. S. A.—E. W. Mitchell, who is the owner of a fine fruit farm near Kinderhook, N. Y., is assisting in the Winter Course work of the Department of Plant Pathology.

'09, B. S. A.—Paul Judson has purchased a fine fruit farm at Kinderhook, and in connection with his brother, Prof. L. B. Judson, is planting 4000 yearling apple trees. A progressive Pomological Society has been formed in that section and we expect to see and hear great things about the Kinderhook Country in the future.

Sp. '09. E. I. Bayer was married January 13th to Miss Southworth, of Geneva, N. Y. The wedding was held at the bride's home. Mr. and Mrs. Bayer will reside at Toledo, Ohio, where Mr. Bayer is junior partner with his father in a large vegetable and cut flower business.

'10, B. S. A.—K. B. Lewis has accepted a temporary position with the United States Department of Pomology. He is studying and investigating transportation and marketing problems of fruit in Florida.

'10, Ph.D.—Dr. E. P. Humbert, who took his doctor's degree last spring has been appointed special agent to carry on work in farm management in connection with the United States Department of Agriculture. Dr. Humbert took charge of this work about the first of last September.

'10, M. S. A.—Mr. H. B. Cowgill has been appointed plant breeder of the Cuban Sugar Refining Co. He is engaged at the present time in the selection and breeding of sugar cane to secure greater yield and increased sugar content. Mr. Cowgill has a position of very great opportunity and some very fine work from him is to be expected.
The following excerpts have been taken from the Round Robin Letter of the Craig Club of '09-10:

'10, W. H.—Chas. F. Bley, one of the best known "Short Horns" of the 1910 class, when last heard from was orchard foreman of an orchard of 13,000 trees at Point Breeze, N. Y.

'10, W. H.—Sprague is located at the Thurner Hill farm at Ipswich, Mass. He is employed as foreman of the fruit department.

'10, W. H.—W. P. Harris exhibited some very fine boxes of fruit at the Maryland Horticultural Society's meeting.

'10, W. H.—Hamilton has purchased a ten acre farm near Gasport, N. Y. He is specializing in the production of berries.

Ex., '10—On December 28th, last, Margaret Perry Stanion, daughter of Mr. and Mrs. Chas. B. Stanion, of Ithaca, N. Y., was married to Floyd Nelson Darling of South Montrose, Pa. Darling was a prominent man in his class being a debater and the Ivy Orator of the class of 1910. Mr. and Mrs. Darling now make their home at South Montrose, Pa., where Mr. Darling holds a position as superintendent of the Ballantine farms.

Sp., '10—Walter G. Page who was married last October to Mary C. Williams is now living on his father's dairy farm at West Edmeston, N. Y.

'10, B. S. A.—Cornelia F. Kephart is assistant in zoology in the New Hampshire State College and Experiment Station at Durham, N. H.

GENERAL AGRICULTURAL NEWS

The annual meetings of the New York State Dairymen's and the Butter and Cheesemakers' Associations ended at Ogdensburg last week with a very enjoyable banquet, at which Dean L. H. Bailey of the State Agricultural College was the honored guest. One commendable feature of the meeting was that the program was carried out and no absence explanations were necessary. While many interesting subjects were prominent, nothing specially new was said, and the value of the meeting was determined by other things. One of these was cow testing associations, whose practical workings were explained by a dairyman who is a member of the only one in St. Lawrence county. The results secured by this association have been an increase of 33 1/3% of butter fat in the dairies connected with it. The speaker would have a Babcock test in every rural school, as the machine would supply interesting object lessons throughout the district.

Pres. Fredericksen of the Dairymen's Association made an important recommendation in his annual report, viz.: that because, under the present order of things, when the convention is held in the northern part of the state, dairymen from distant parts do not attend, and the same thing is noticed when the convention is held in central, western or southern suburbs; he recommends one large convention to be held in the central part of the state and the smaller ones in the various sections each year, so that the dairymen of every county might attend without traveling long distances.

Commissioner Pearson explained the methods and management of the Department of Agriculture with respect to changes made and contemplated in the dairy law. Dr. Bailey delivered a philosophical address, which could have been listened to with much profit by the United States Senate. He drew a distinction between the country life movement and the back-to-the-land movement. One, he said, is an evolution in our national existence, the other only a little ebullition on the present surface.

* * *

The Fourth Annual National Corn Exposition was held at Columbus, Ohio, from Jan. 30 to Feb. 11. Eminent speakers from all parts of the
country were present at this Exposition. The Experiment Stations and Agricultural Colleges of twenty-five States each presented, in a graphic manner, some feature or features of their most advanced experimental work.

These exhibits, which were in charge of expert demonstrators, dealt, in a practical way, with nearly every phase of the science of agriculture. For instance, North Carolina emphasized the cotton industry from the growing plant to the manufactured article, with cotton gin and loom in actual operation, while Illinois especially emphasized its soil work. There was a wonderful showing of results in agriculture, based on scientific investigation.

* * *

The 36th annual meeting of the Ayrshire Breeders’ Association was held at Hotel Manhattan, New York, with about seventy-five members and invited guests present.

The election of officers resulted in the choice of Mr. John R. Valentine, Bryn Mawr, Pa., president; Dr. J. A. Ness, Auburn, Maine, George E. Pike, Gouverneur, N. Y., J. W. Clise, Seattle, Washington, J. W. Ogden, Morris-town, N. J., vice-presidents; C. M. Winslow, Brandon, Vt., secretary and treasurer; George H. Yeaton, Dover, N. H., auditor; Charles H. Hayes, Portsmouth, N. H., and John W. Oakey, Bryn Mawr, Pa., executive committee for three years.

A banquet was served of 44 covers, after which President Valentine gave a very interesting and instructive talk on Scotland and the Ayrshire cow, illustrated by stereopticon views of the two types of cows found in Scotland, the dairy type with a marked dairy conformation of large udder and long teats, and the vessel type so called, being the show ring Ayrshires of Scotland, which are kept simply for showing in the ring.

The concensus of opinion at the meeting was that it was the largest and most enthusiastic meeting yet held, and that the outlook for the perfect cow, was never so hopeful.

* * *

National Corn Day was observed Friday, Feb. 3, throughout the country. At the Exposition, the National Corn Banquet was held on the evening of the third. At this banquet, Secretary of Agriculture, James Wilson delivered an address on “The Evolution of American Agriculture.” This banquet was the largest purely agricultural banquet ever held. Subjects of importance relative to the consumption and production of corn were threshed out. The menu was one of greatest excellence and consisted entirely of corn products, every form of corn food being served. Plates were laid for 1500 guests on this occasion, the feast being served in the main Auditorium of the Exposition.

The National Rural Life Conference was in session, Feb. 7 to 10. Among the speakers at this Conference, was L. H. Bailey.

The American Breeders’ Association met at the Exposition during the first three days. Problems of animal and plant breeding were discussed.

* * *

At the Reading Terminal Market, in Philadelphia, states The National Stockman and Farmer, several carloads of apples grown east of the Alleghany Mountains were exhibited during January. Every apple was sold on the market during the show or afterwards. But the rooms were kept full, new shipments taking the place of those sold. The fruit shown was labelled with the grower’s name and address, and a statement as to where grown. Visitors could see exactly what has been done in any locality represented.

The object of this show was to demonstrate that apples grown in Eastern states are as good in color, size, shape, flavor and texture as the high-priced western fruit.
Although the United States is the greatest cotton-producing country in the world, a large quantity of this staple is imported from Egypt every year. The variety of cotton most extensively grown in Egypt is known as the Mit Afifi; it has a soft, rather crinkly fiber of a characteristic light brown color that renders it especially useful for certain classes of cotton goods in which the natural color of the fiber is retained.

The best Egyptian cottons bring a price second only to that paid for the highest grades of Sea Island, being used solely in the manufacture of the finest goods. They are especially suitable for mercerizing, taking this process better than the native American cottons, and are largely used for mixing with silk and for the manufacture of cloths in which a high finish and luster are required. In 1909, the import of cotton from Egypt amounted to 72,617,893 pounds, valued at $12,101,000.

In view of the considerable value of this import, the U. S. Department of Agriculture is endeavoring to develop Egyptian cotton culture in the United States in order to supply the American market with a homegrown product. As a result of experiments that have been carried on for the past seven years in acclimatizing and breeding Egyptian cotton in the Southwest, several distinct types have originated from the stock of imported seed of the Mit Afifi variety with which the work was begun. Two of these are as distinct in the characters of the plants, bolls and fiber as some of the newer varieties which have originated in Egypt from the Mit Afifi. A third promising type is an improved acclimatized strain of Mit Afifi rather than a new variety.

Spinners who have examined samples of the acclimatized Egyptian fiber grown last year in the Southwest pronounce it to be in every way as well adapted to their requirements as is the imported cotton of corresponding grades.

* * *

The Parcel’s Post is still being discussed. President Taft, in his message, suggested it be given a trial. The Postmaster General has said the same thing but advises putting it on a paying basis. He holds that by raising the rate of second class matter, letter postage could be reduced to one cent and the P. O. Department could be made to pay for itself. We will, undoubtedly have a parcels post eventually but at present there are a great many things to be considered, such as the rate, the relations with Express Companies, and prevention of abuse of the system by the large companies delivering goods, etc. The Saturday Evening Post for January 12, has a very good article concerning the systems in use and their success in Europe, which is worth reading.

* * *

L. H. Bailey in the January Century praises the work of Mr. Charles E. Patten of Charles City, Iowa, for his methodical system of plant-breeding. Mr. Patten began his plant-breeding work over forty years ago, before any public institution had undertaken any investigation of this kind. Being a nurseryman, he endeavored to produce fruit trees hardy enough to withstand the cold prairie conditions. This resulted in the production of the Patten Greening, now a standard apple of the Iowa-Wisconsin-Minnesota region, and several other accepted varieties. Besides, Mr. Patten has a large number of new and promising things awaiting further test. At present, he has more than 10,000 apple seedlings of known parentage growing on his plantations. The results of his tests will be watched for with interest by plant-breeders everywhere.
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Courses of Instruction in the College of Arts and Sciences,
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Announcement of the College of Civil Engineering,
Announcement of the College of Law,
Announcement of the College of Agriculture,
Announcement of the Medical College,
Announcement of the New York State College of Agriculture,
Announcement of the Winter Courses in the College of Agriculture,
Announcement of the New York State Veterinary College,
Announcement of the Graduate School,
Announcement of the Summer Session,
The President's Annual Report,
Pamphlet on prizes, samples of entrance and scholarship examination papers, special departmental announcements, etc.

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The Registrar of Cornell University

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L. H. BAILEY, Director.

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3. Winter-Courses of 12 weeks: (a) General Agriculture; (b) Dairy Industry; (c) Poultry Husbandry; (d) Horticulture; (e) Home Economics.

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REPORTS OF CONFERENCES HELD DURING FARMERS' WEEK, 1911

STUDENTS' ASSOCIATION.

THE second annual meeting of the Students' Association of the New York State College of Agriculture was held on Tuesday, February 21, in the midst of Farmers' Week. Mr. Samuel Fraser, of Geneseo, presided in the absence of the president.

The meeting was opened by a masterly address by Director Bailey on the part that the Students' Association and similar organizations may take in the present country life movement. Out of this splendid and inspiring address, which was heard by a large audience, grew the following resolutions, which were passed unanimously by the Students' Association:

I. "Resolved, That it is the sense of the Students' Association of the New York State College of Agriculture that all the organizations, forces, and lines of work, represented in the Farmers' Week be welded into a New York State Country-Bond, for the purpose of uniting all agencies in a new campaign for rural progress; and that we recommend similar action on the part of the other organizations participating in Farmers' Week."

II. "Resolved, That it is the sense of the Students' Association that Rural Improvement societies be organized in the different neighborhoods in the State to look after the care and the improvement of all public and semi-public property, for the purpose of increasing the attractiveness of the neighborhood, preserving historic places, and contributing to the satisfaction of the region as a place in which sensitive persons may live; and that we pledge ourselves to endeavor to organize such units in our respective communities."

III. "Recognizing that many country fairs are doing excellent work, but believing that in the large the method or system is inadequate for present-day conditions, and that the invasion of numberless catch-penny amusement features, side-shows, cheap vaudeville, professional travelling exhibitors, advertising devices, and the like, has tended to destroy the local agricultural interest to the extent that the fair is failing of its fundamental purpose,

"Resolved, That the Students' Association of the New York State College of Agriculture recommend to fair associations and agricultural societies in New York State:

"1. That a definite program of reorganization be undertaken, looking toward the creation of a new type of country fair that shall be truly representative of the farming country and of service to it.

"2. That as fast as possible all concessions, shows, midways, and other extraneous features that are not a legitimate expression of country life be eliminated.

"3. That greater effort be made to secure exhibits of local farm stock and produce, home cooking, appliances, handiwork, school work, club work, and the like, seeking to interest
and secure an exhibit from every person in the farming community.

"4. That good games, sports, contests, pageants and other recreational features be introduced for persons of all ages, and be made an important part of every fair."

Mr. Irving S. Warner reported concerning the organization of the Long Island Branch of the Students' Association, and that it had pledged itself; first, to the promotion of the Long Island School of Agriculture; second, to the introduction of agriculture into the high schools; third, to the improvement of rural school grounds and other public places.

The secretary reported a total signed membership to date of 228 persons.

The following officers were elected: President, L. C. Corbett, '90, Bureau of Plant Industry, Washington, D. C.; 1st Vice-President, R. A. Mordoff, '11, President of the Agricultural Association, Ithaca; 2d Vice-President, R. H. Dayton, Sp. '06-08, East Hampton, L. I.; 3d Vice-President, H. H. Harri- man, W.C., '06, Syracuse; 4th Vice-President, S. G. Judd, '11, Editor Cornell Countryman, Ithaca; Secretary-Treasurer, A. R. Mann, '04, Ithaca; Member-at-large of executive committee, Mr. Samuel Fraser, Geneseo.

The executive committee voted to push the foregoing resolutions, and to continue the organization of local associations or county chapters. The employment service will also be continued, as will the direct touch with former students through the mailing of pamphlets, printed addresses, and the like.

**RURAL CHURCH CONFERENCE**

On Wednesday and Thursday of Farmers' Week a rural church conference was held, attended by country pastors, theological students, representatives of the faculties of theological seminaries, Y. M. C. A. secretaries, and others. Very able addresses were given by Warren H. Wilson of the Department of Church and Country Life of the Presbyterian Board of Home Missions, Rev. Geo. F. Wells of Drew Theological Seminary, Mr. Albert E. Roberts of the International Committee, Y. M. C. A., Rev. C. F. Tator of Northport, Rev. T. M. Morrison of Bellona, Rev. W. C. Taylor of Frankfort, and Director Bailey. The central theme of the conference was "The Community Program." At the country pastors' round table on Thursday morning, the following community program, proposed by Rev. Geo. F. Wells, was adopted:

**I Individuality**

**COMMUNITY PROGRAM**

Every country community needs and should have the ministry of the church, and it is the business of the community in cooperation with the church to provide the equipment to facilitate the expression of the religious life of the community; this equipment to include an energetic minister for the administration of the church and to develop the moral and religious leadership of the community.

In determining his relationships to the resources and problems of the community the pastor may need the assistance of a scientific survey of his field.

**II Service**

**CHURCH'S WORK**

The country church, in common with all other churches, being an institution for realizing the moral and religious welfare and betterment of society, in the systematic exercise of its functions provides for pastoral visitation, evangelism, temperance and other moral reforms, religious education and missions.

**III Unity**

**CHURCHES WORK TOGETHER**

Where country churches are related geographically to other churches in the same community, these churches in maintaining their internal integrity will mutually practice some method of inter-church
unity whereby the comity, the maximum-service federation or the one-minister federation, will be realized, or they will, if the spiritual interests of the community clearly need it, voluntarily proceed to form a single comprehensive church.

IV Association
CHURCHES WORKING TOGETHER CO-OPERATE
Country churches in proportion to their inherent capacity to maintain a mutually helpful community relationship will be in vital and cooperative touch with the necessary social interests, movements and institutions in the community. Thus will be realized what is commonly known as the federation of rural social forces. By this means the church will promote or inspire:

(a) The improvement of schools and their consolidation where needed.
(b) Cooperation with the grange and all movements looking toward better farming.
(c) Needed recreations.
(d) Public health and better living conditions.

The fundamental social institutions thus federated will be able to eliminate the associations which unnecessarily exhaust the community resources.

V Substitution
CHURCHES WORKING TOGETHER SOCIALLY SUBSTITUTE
In instances where the structural and essential institutions and agencies of a community are not fulfilling their functions, and cannot by direct personal means be stimulated to accomplish them, the church may temporarily and in behalf of needy classes, such as the marginal people, perform these functions by so-called institutional agencies.

VI Solidarity
THE CHURCH IS THE RELIGIOUS AND MORAL ASPECT OF THE WHOLE COMMUNITY
The country church, when its internal, federal and community relations are normally realized and community solidarity is attained, will do its part in maintaining the vital equilibrium of all helpful community factors.

THE CORNELL HORTICULTURAL UNION
The Cornell Horticultural Union had a successful meeting on Thursday, February 23, in which the progress of horticulture in its various branches were discussed by Samuel Fraser on “Orcharding,” by W. L. Bonney on “Market Gardening and Trucking,” by H. F. Hall on “Co-operation in Marketing,” by L. S. Tenney on “Marketing Methods,” by P. O’Mara on the development of “Floriculture in the United States” and by Prof. Craig on the “Development of Commercial Orcharding Enterprises in the West and South-west.”

The second annual dinner was held at the Alhambra on Thursday evening and about 55 persons enjoyed a good dinner and much social pleasure. The speakers were:

Samuel Fraser, Toastmaster.
J. P. Stewart, “Theory in Horticulture.”
W. L. McKay, “The Nurseryman’s Relation to the Orchardist.”
Patrick O’Mara represented the N. Y. Florist’s Club in an interesting address.
C. R. White, “The Newly Formed Vegetable Association.”
Uncle John Spencer, “Reminiscences of Early Days at Cornell.”
Prof. Craig, “Advice to the Younger Men.”

The officers for this year are: President, E. W. Catchpole; vice-president, S. D. Beckwith; Secretary, R. D. Anthony; executive committee, Prof. Craig, chairman, L. B. Judson, J. S. Allis.

THE VEGETABLE GROWERS’ ASSOCIATION
The vegetable growers of New York State convened at the College of Agriculture on Wednesday,
February 22, and appointed a committee to formulate a constitution and by-laws for a state association. On the 23d the constitution was adopted and officers were elected as follows: President, C. R. White of Ionia; vice-president, Mason H. Holmwood of Orchard Park; secretary, Paul Work, Ithaca; treasurer, C. H. Aldrich, Mattituck; executive committee: C. R. White, Paul Work, Ezra A. Tuttle, Eastport; G. M. Keller, Brighton; W. L. Bonney, Batavia. The object of the association was stated as follows:

"Art. II. The object of this association shall be to organize and federate the interests of those engaged in vegetable growing to the end that larger crops of constantly increasing quality may be grown and marketed with increased profit."

The constitution provides for the following committees:

"Art. V. The executive committee shall consist of the president, the secretary, and three members elected at large who shall represent, as far as possible, the different phases of the vegetable industry of the state."

Article VI. provides for a standing committee to represent Marketing, Transportation, Legislation, Investigation, and Federation.

It is the aim of the association to interest local organizations.

The constitution provides for two types of membership, namely: annual and sustaining members. The annual fee is $2. Any person desiring to support this good work may become a sustaining member on payment of $100.

CORNELL DAIRY STUDENTS' ASSOCIATION

During Farmers' Week there was held the Annual Meeting of the Cornell Dairy Students' Association. This Association consists of those students who have taken the Winter Course in Dairying at the New York State College of Agriculture. The object of the Association is to promote the best interests of dairy industry and to hold together the students who have taken the Winter Dairy Course. This Association has done much good in the past and greater things are expected of it in the future. It is the intention of the Association to become an important link in the York State Country Bond suggested by Director Bailey in his address before the Cornell Students' Association. It is hoped that all former Winter Dairy students, who have not joined the Association will do so at once. By joining the Association they will benefit both the organization and themselves.

At the meeting the following officers were elected for the ensuing year:

President, W. L. Markham; 1st vice-president, John Kelly; 2d vice-president, H. C. Teal; 3d vice-president, R. C. H. Fowler; secretary, Clarence Gaylord; assistant secretary R. C. H. Fowler; treasurer, J. A. Smith.

NEW YORK PLANT BREEDERS' ASSOCIATION

The meetings conducted under the auspices of the New York Plant Breeders' Association during Farmers' Week were a great success. There were interesting and valuable talks by members of the Plant-Breeding staff of the College of Agriculture and also many outsiders such as Assistant Secretary W. M. Hays, U. S. Department of Agriculture; Professor L. C. Corbett, U. S. Department of Agriculture; Professor Hedrick, of the Experiment Station, Geneva; Mr. T. E. Martin, of the New York Central Railroad; Mr. Samuel Fraser of Geneseo, and others. The subjects of the talks were broad in their scope, covering the breeding of such farm crops as timothy, corn and potatoes; vegetables including tomatoes, cabbage, etc.; flowers and trees, including a discussion of the breeding of apples, peaches and nut trees.

This series of meetings is the beginning of a broad propaganda line of work which the New York Plant Breeders' Association is planning to carry on in New York State. Special
effort is being made to rapidly increase
its membership among men who are
doing plant-breeding in all of its
various branches.

An affiliation has been made with
the American Breeders' Association
whereby members of the New York
Plant Breeders' Association will also
become members of the American
Breeders' Association upon the pay-
ment of regular dues of the latter,
thus allowing all members of the
New York Plant Breeders' Associa-
tion to obtain the annual reports of
the National Association and also the
Breeders' Magazine issued by it.

At the annual meeting the follow-
ing officers were elected for next
year: President, Samuel Fraser, Gene-
seo, N. Y.; vice-president, Herbert
P. King, Trumansburg, N. Y.; secre-
tary, Arthur W. Gilbert, Ithaca, N. Y.;
treasurer, George R. Schauber, Ball-
ston Lake, N. Y. Additional mem-
bers of the executive committee are:
U. P. Hedrick, Geneva, N. Y.; J. F.
Eastman, Morrisville, N. Y.; E. W.
Mosher, Aurora, N. Y.

THE HOME-MAKERS CONFERENCE

The program of the third annual
meeting of the Homemakers' Con-
ference was held in connection with
Farmers' Week at the New York
State College of Agriculture, Febru-
ary 20–25. The officers were:

President, Mrs. James Pringle, Ash-
villa, N. Y.; vice-president, Mrs. W. W.
Ware, Batavia, N. Y.; recording-
secretary, Mrs. Lizzie Breads, West-
field, N. Y.; Corresponding-secretary,
Miss Martha Van Rensselaer, Ithaca,
N. Y.; treasurer, Mrs. R. H. Wheeler,
Ithaca, N. Y.

A course of lectures was given by
Professor Howard Riley upon the
following subjects:

“Water Supply,” “Sewage Dis-
posal,” “Mechanical Power for House-
hold Conveniences,” “House Lighting
and Heating.”

These lectures were illustrated with
stereopticon. There was an unusually
large audience for these lectures as
both men and women were interested
in the subjects from the standpoint

of the rural dweller who is try-
ing to improve living conditions.

A second course of lectures followed
through the week were called an ap-
preciation course. The first one on
“Books” by Miss Alice G. Mccloskey
of the College of Agriculture; the
second, on “Appreciation of Growing
Plants” by Director L. H. Bailey;
“Appreciation of Music” by Mrs. O. S.
Morgan of Alfred University, and
“Appreciation of Pictures” by Profes-
sor O. M. Brauner of the College of
Architecture, Cornell University. The
program was much improved by this
variation of the material side of the
Home Economics program through an
hour spent with books, pictures,
music and plants. These lectures and
the interest which they elicited were
an illustration of the vision to be had
in a study of Home Economics. Mrs.
Morgan gave her hearers a delightful
period of song. She emphasized in
her lectures the desirability of a
higher order of music in the rural
church, rural school and rural home.
She would substitute the folk song
and did this so delightfully herself
that her argument needed no further
reinforcement.

Insect pests of house and garden
was the subject of an illustrated
lecture by Professor G. W. Herrick
of the College of Agriculture. The
members of the Department followed
their specialties throughout the week;
Miss Rose in nutrition, Mrs. Young in
planning and furnishing the farm
house, Miss Van Rensselaer on house-
hold sanitation and one lecture on the
housekeeper and the cost of living.

Mrs. Comstock's lecture on “How to
Frame Pictures” was illustrated by
types of pictures and frames.

A conference was held on “Woman's
Work in the Grange” led by Mrs. Lizzie
Breads, Chairman of the Woman's
Work Committee of the New York
State Grange. Another conference
was held with reports from the Cornell
Farmers' Wives' Study Clubs.

On the fourth floor of the College in
the Home Economics Department
there were exhibits of general interest
throughout the week. This included
labor-saving devices with demonstrations of the fireless cooker, vacuum cleaners and washing and ironing machines. There were illustrations of types of work done by the students in the Department with an exhibit of house plans and illustrative material of good house furnishing. The work of the Winter Course students was shown in an exhibit of sewing and of menus. The invalid trays were prepared by Winter Course students and the prize taken for the best invalid tray by Miss Katherine Worden of Ithaca.

The Home Economics Winter Course just closed offers a prize to the next Winter Course for the best menu and dinner served to six persons for a dollar.

At a business meeting of the Homemakers' Conference held at the end of the week it was decided to install the present officers of the Van Rensselaer Club which is the organization of the Home Economics Winter Course class. By this means each Winter Course will have in charge the organization and promotion of the Homemakers' Conference during Farmers' Week. It will also have the effect of binding the Winter Course students throughout the state to the College in a permanent organization. There is a membership fee of 25 cents. It is hoped to add to the membership so as to start a Winter Course Scholarship in the Home Economics Department.

FARMERS' WEEK ACTIVITIES AMONG THE DIFFERENT DEPARTMENTS

DEPARTMENT OF DAIRY INDUSTRY.

DURING the Farmers' Week held at the New York State College of Agriculture, February 20-25, 1911, the Department of Dairy Industry gave lectures and demonstrations in the following subjects: "Farm Butter Making," "Clean Milk Production," "Testing Milk for Fat by the Babcock Method" and "The Keeping of Cow Records." All of these subjects are very important to the farmer who is making dairying the chief feature of his farm work. The dairyman has an excellent opportunity to produce a high quality of butter on the farm because he has complete control of his milk supply. In many instances the product is not what it should be because the farmer does not understand the principles which underlie good butter making. In the talk upon this important subject the points which were emphasized were those which would be most practical and important to the farm dairyman.

The question of clean milk is an important one and for the past few years has received especial attention. In many of our large cities infants are wholly dependent upon ordinary market milk. As a food, not only for infants and invalids but for everyone, it is necessary that this article of diet should be produced in a cleanly and sanitary manner. In the lecture on clean milk those points were emphasized which tend to produce clean milk and yet at the same time are cheap, practical and possible to be performed by every dairyman. It was also pointed out that clean milk is necessary in order to make good butter and cheese.

In connection with the talk on the Babcock test a demonstration of testing whole milk was made, and especial emphasis laid upon those points which an inexperienced operator is liable to neglect. A discussion was also taken up on the testing of products of milk, such as cream, butter, skim milk, etc.

Perhaps no subject given by the Dairy Department was as important as the one on the keeping of cow records. It has been proven many times beyond question that a great many dairymen in New York State are keeping cows which not only do
not pay for their keeping but which are actually kept at a loss. In the lecture upon this subject it was pointed out that the one sure way to tell what the cows were actually doing is to weigh the milk and test it for butter fat. A good idea of the production of a cow may be obtained by weighing the milk night and morning once a month and then testing a sample of this milk for butter fat. In order to stimulate work in this direction, cow testing associations are formed. In a cow testing association the farmers band together and each farmer pays a certain price per cow, usually one dollar. A competent man is employed who visits each farm once a month and weighs the milk from each cow and tests it as already mentioned above.

A cow testing association should not be made the means of advertising cows for sale. Its object should be solely to find out which cows in a dairyman's herd are yielding him the most profit. After this knowledge is obtained the dairyman can dispose of his poorest cows and improve his herd by breeding the best cows to a good sire. This is probably one of the most inexpensive ways of building up a good herd and the importance of testing young cows is especially urged so that the best of the young stock may be saved for breeding purposes.

DEPARTMENT OF HORTICULTURE.

The department of Horticulture had many out-of-town speakers to give lectures and practical demonstrations. Vegetable culture was expounded by the following:

C. R. White, Ionia, N. Y., in his talk on the "Coöperative Selling Association in Action," aroused a great deal of interest because his association marketed last year a very large acreage of cucumbers all over the country with a considerable degree of success. His talk was very important as it showed the beginning of the application of western marketing methods to eastern markets by the eastern growers.

The evening event with the vegetable growers came Tuesday, the 21st. Mr. H. F. Hall and Prof. L. C. Corbett in illustrated lectures showed the different methods used by growers in various parts of the country. Without a doubt the Boston market gardeners use methods superior to those of growers in any other section. Prof. Corbett has had very wide experience among the most expert market gardeners of the best trucking districts.

On Wednesday morning, Mr. Hall spoke on packing and marketing vegetables. He said that the Boston growers are working very hard at the present time on the problem of distribution and they expect to apply coöperative principles to the local markets.

Mr. Chauncey West, a member of the firm of J. H. West & Sons, spoke Wednesday and Thursday on the growing of vegetables for local market and on greenhouse management. He gave some very valuable information on the most up-to-date methods and was very open and free in expressing himself on all special points of the business with a generosity which has not been characteristic of the growers of the past. Mr. West is an exceedingly energetic and practical grower of both greenhouse and field crops.

Prof. Fippin drew a very large audience on Thursday with his forceful talk on the development of muck lands in New York.

Mr. W. L. Bonney of the firm of Bonney & Ware of Batavia, also spoke on muck land crops. He gave the principles of growing celery and lettuce on muck.

Mr. C. D. Levan, who grows a million plants a year discussed the production of early vegetables.

On Tuesday, a Round Table was held on marketing methods, led by Prof. Craig. The meeting was spirited and interesting.

Mr. R. O. King, of the King Construction Co. and Mr. W. R. Cobb of Lord & Burnham lectured on the development of greenhouse construction and showed some interesting
lantern-slides to illustrate the various features on construction of their respective companies.

Floriculture was represented by Mr. Patrick O'Mara, a successful florist of New York City, Mr. Arthur Cowee, the Gladiolus specialist of Berlin, N. Y., and Mr. G. Arnold, of James Vicks' Sons Seed Co., Rochester, N. Y.

On Wednesday, Mr. O'Mara gave an exceedingly interesting and inspiring talk on "Opportunities in Floriculture". He strongly recommended Floriculture as a most pleasant and profitable occupation but warned anyone against starting into the cut-flower business without at least two years of practical experience with a large commercial house. In part, he said: "To the young man—go slow about getting into the cut-flower business. Begin as a general florist in a town of five thousand or more inhabitants, to supply the home market. Have a little fruit, a few vegetables, some cut-flowers, and some growing plants for sale. Find out what the people want and grow that mostly. It is an easy line to get into and that is how most of the now successful florists began. Lay down as good a knowledge of landscape gardening as possible, for although Landscape Architects are being made now in the colleges, they will have charge of all the big work and, no matter how many there are of them, there will always be room for the man who can supply decorative plants from his own nursery."

On Friday, Mr. G. Arnold explained the operations of what is now practically a new line of Floriculture, namely the growing of special flower crops in the field. Mr. Arnold has had wide experience in growing flowers and is an expert on the growing of asters. For field crops, he advised a careful choice of soil in order to get a type which is rich, fine and mellow. The flowers used for this purpose must have special qualities, namely: lasting quality, strong stem and good foliage, proper color, firmness and strength to withstand packing and shipping. The aster is admirably adapted to this purpose as it possesses all of these qualities. Mr. Arnold gave a very complete list of plants which might be used for this purpose, the foremost of which being asters, sweet peas, gladioli, and dahlias.

The department was very fortunate in securing Mr. Arthur Cowee, the well-known Gladiolus Specialist of Berlin, N. Y., to talk on the commercial growing of the gladiolus. Mr. Cowee was formerly a banker who started the raising of gladioli as a mere hobby and afterwards developed the business to very large proportions. In his lecture, Mr. Cowee gave an account of the business from its beginning and explained in detail the methods of growing, propagating, storing and marketing the bulbs. He showed about 100 lantern slides, most of them hand-colored photographs of gladiolus spikes in full bloom. They displayed well the almost infinite variety of color and marking possible to obtain in these most gorgeous flowers. A few of the slides showed great valleys covered with a dense mat of gladioli, colored so naturally that one could imagine the broad fields of red or blue flowers actually before him. Mr. Cowee said that the sight was so grand that hundreds of tourists came from far and wide every year to see the fields in bloom. He gave his audience a special invitation to visit his plantation.

His solution of the labor problem is quite unique. His force of workmen is composed largely of tramps who have happened into the town and were willing to enter his employment. They are given to understand that they will be considered gentlemen until they are proven otherwise and most of them live up to their contract. They are, as a rule, honest, orderly and industrious.

In speaking of the pleasures which he derived from the business, Mr. Cowee said that even as successful and profitable as the occupation might be, the delight of living among growing plants and the love for the exquisite
and beautiful flowers was far greater consideration than the profits of the business itself.

DEPARTMENT OF ENTOMOLOGY.

Four well attended lectures were given by the Department. The first, by Prof. C. R. Crosby on "The Cause of Knotty Apples," was very well attended. On Wednesday two lectures were delivered by Prof. G. W. Herrick; one in the morning on "Insect Pests" and another in the afternoon on "Harmful Fruit Insects." On Friday, Prof. Herrick again lectured on "General Insect Pests on the Farm."

DEPARTMENT OF SOIL TECHNOLOGY.

Five general lectures were offered by the Department of Soil Technology as a part of the Farmers' Week program. These were given with particular reference to those questions in the state about which the farmer is in most need of information, and dealt with the following topics: "The Relation of Lime to Soil Improvement," "The Utilization of Muck Lands in New York State," "Home Mixing of Fertilizers and Calculation of Trade Values," "Drainage" and "The Philosophy of Tillage." Special emphasis was laid upon the relation of the chief farm practices in the improvement of the soil. The order given was as follows: drainage, the maintenance of lime, maintenance of organic matter, deep and thorough tillage, including the conservation of moisture, and the use of fertilizers. When arranged in this order, each practice is in position to attain its highest efficiency, and placed in any other order a lower grade of efficiency is sure to result.

Exhibits were presented in the Soils Laboratory dealing with the capacity of soils to retain and move moisture, the efficiency of mulches, the benefits of drains and their operation, fertilizer materials, forms and equivalency of lime, and the agricultural status of the state.

DEPARTMENT OF FARM MECHANICS.

One of the important exhibits displayed during Farmers' Week was that of the Farm Mechanics Department.
An electric light plant, consisting of gasoline engine, dynamo and storage battery, was in operation. Such an outfit is specially suitable for farm houses and costs about $450.

A compressed air water system was piped up to a kitchen sink and boiler. A washing machine was connected to the sink faucet and run by water power.

A thermo-water lift, or steam pump with boiler attached and having no moving parts, was quite a novelty in the pump line. The whole thing complete costs $170.

Nine different types of traction spray rigs, various spraying attachments, spray booms, sprayograph and an outfit showing how to use hand power for spraying on a fairly large scale, were exhibited. The exhibit overflowed into the hallway of the basement, the Farm Mechanics laboratory being far too small to contain it.

The Department of Farm Management and Farm Crops.

Results of the agricultural survey work, farm accounts, pastures, and corn were discussed during Farmers' Week by the Department of Farm Management and Farm Crops.

"The Most Important Factors in Farm Management and their Application by Some Successful Farmers," was discussed by Professor G. F. Warren in a two-hour talk. Lantern slides were used to show the survey figures upon which the talk was based. Farmers on the poor soil types were found to be making less profits than those on better soils. Distance from market was another factor affecting profits.

It was shown that on the average, money spent for hired help was a very profitable investment.

Size of business was shown to be the most important factor. Bigger farms, more capital, more machinery, more cows, more horses, all resulted in bigger profits for the farmer. The gross receipts per acre, were greatest on small farms but the cost of production was still greater so that the net result was a loss. The net profits per acre increased as the area increased.

Man labor, horse labor, and use of machinery are the largest cost items in farming. All of these are used most efficiently on large farms. On the largest farms, one horse farmed three times as many acres as on the smallest farms; $100 worth of labor farmed five times as many acres; and at the same time the crop yields were just as good.

Diversity of the business was emphasized as another important factor. Every one of the most successful farmers had more than one important source of income. No farmer who had only one specialty got into the group of most successful farms.

Quality of business, that is, good cows and good crop yields, also bore an important relationship to profits.

A comparison of the twelve most profitable farms with the average, showed that this type of farming which pays the farmer best, also furnishes the most food to cities. One acre on these large efficient farms contributed more food to the city supply than two acres on the average farm.

"Farm Management for Dairymen," was the subject of another talk by Professor Warren. After pointing out the necessities of good cows, and the greater profits in selling market milk rather than butter or milk to creameries, he emphasized the importance of diversity for the dairymen. Dairying is only a partial day's work in summer. To use labor most effectively, more crops than those required for feed must be grown. The most successful dairymen in Tompkins County buy considerable feed and raise hay, or potatoes, or apples, or something else to sell.

For the rural pastors, Professor Warren pointed out several important needs in country life. Among them were more education for the farm boys; other accommodations than the saloon for the farmer when he comes to town; and good dirt roads from the farm districts to the towns, in addition to trunk roads connecting towns.
In another talk, Professor Warren told how to start with small capital. A full report of this will be given in the April issue.

To those interested in keeping farm accounts, Mr. K. C. Livermore suggested ways of simplifying the work and of making more use of the accounts. He pointed out the importance of knowing the profits in the different departments of the business, so that the profits on the business as a whole might be increased.

Professor White gave two lectures on pastures and one on corn. The pastures of New York State are much in need of improvement. The essential points to be noted in the improvement of pastures are: Careful grazing; mowing before midsummer in order to kill weeds and to encourage new growth of grasses; fertilizing or barn-yard manure; and reseeding.

Variety tests of corn have been carried on in various parts of the state for two years. In 1910, the average yields of shelled corn of all flints was 39 bushels per acre. The average yield of all dents was 34 bushels per acre. In at least three-fourths of the state, the flints are safer than the dents where grain is needed. Under many conditions they are probably best also for the silo.

The corn show which was conducted under Professor White's direction, is described in another place.

DEPARTMENT OF POULTRY INDUSTRY

The regular program of demonstrations and lecture by the Department were carried out entire. That everything was successful is proven by the fact that many were turned away, the Head House being too small to hold the crowds. All the former Winter Course classes were represented.

The following lectures outside of the Department lectures were given: "Fattening of Fowls," by Mr. Fred Skinner, Green, N. Y.; Demonstration of Caponizer, and lecture on "Marketing of Soft Roasters," by Henry Dana Smith of Wilmington, Mass.; and two lectures by Prof. H. C. Pierce, Washington, D. C., on "Marketing of Poultry Products as Conducted on a Large Scale in the West."

The Winter Course students formed a Poultry Association and became affiliated with the York State Bond of Agricultural Students.

A meeting of the Poultry Association was also held Thursday evening of Farmers' Week. A list of speakers and subjects follows: Mr. L. H. Schwartz, "Comparison of Moulted Period of Fowls and their Prolificacy." Mr. J. E. Dougherty, "Comparative Prices of Poultry, Eggs and Building Material in Different Sections of the United States." Mr. A. L. Dean, "Correlation Between the Prolificacy of Fowls, their Weight, and the Weight of the Eggs Produced." Mr. F. M. Briwa, "Hopper Method of Feeding Hens." Mr. E. A. Benjamin, "Market Eggs in New York State."
THE DOOM OF OUR WILD LIFE
By William T. Hornaday

UNLESS the real Americans of today arouse themselves from the lethargy that binds them like a narcotic spell, we will presently hand over to posterity a continent practically destitute of desirable wild life. Any man who cares can easily convince himself on this point by an examination of the ledger of Predatory Man in account with Nature.

All our wild life that is best worth having is rapidly slipping away from us. If time and space were available, I would willingly bring forward proofs of the truth of this statement; but after all, who is there who is familiar with the history of our fauna who will dispute it? There are localities here and there in which a few bird species are said to be "holding their own", or it may be claimed are "increasing"; but all such are merely local exceptions. Take it all over any one state, or over the United States or even the continent if you will, and there is but one statement that fits the case. Our desirable wild life is rapidly vanishing!

There are only two real questions of magnitude. One is,—is it possible to arouse the people to the point of adequate action before it is too late?—and the other,—how can they be aroused, and galvanized into adequate action?

The future of our wild life is bound up in the answers to those two questions. The road to Conservation is straight and plain. In fifteen minutes time, I can write down specific directions for the saving of our wild creatures, with a medicine-man's "guarantee" that if put into practice at an early date they will be thoroughly effective. But can we arouse the Public to the actual locking of the door before the horses all are stolen?

There is nothing mysterious about the methods by which our wild creatures might, could and should be saved. Here are the requirements:

- Stop the sale of wild game, everywhere.
- Stop all shooting of birds in winter and spring.
- Stop the use of "pump" and "automatic" guns in hunting.
- Stop all shooting of shore birds, doves, robins, and squirrels as "game" and "food".
- Reduce all bag limits on birds from 50 to 75 per-cent.
- Shorten all open seasons at least 50 per-cent.
- Stop, all over the world, the killing of birds for commercial or millinery purposes.
- Establish 5- or 10-year close seasons for all endangered species.
- Absolutely prevent the ownership of firearms by aliens.

Now, the universal adoption of this program would save our wild life; beyond all question. But how about its adoption?

Whenever it is read, in mixed company, two things happen. (1) The man who does not feel interested in shooting says, "Too much trouble!" (2) The man who does shoot sometimes objects to the thing that hits him, and wants the restrictions put on the other fellow!

For example, the makers and users of the deadly automatic or "auto-loading" shot-gun say, "Enforce the laws thoroughly! Limit the bag! Stop the sale of game; but DON'T touch my automatic gun! What! Cripple an Infant Industry? Hamper Inventive Genius? For shame! Go and restrict the other fellow!"

I have heard this talk by the hour, in my office, word for word as here set down. And the worst of it is, many a good sportsman wants his PET privilege held inviolate. Last winter when we tried to get the Legislature to pass our bill to save the gray squirrel, certain parties demanded that Chautauqua County be left out of the close-season schedule; another demanded that Steuben
County be left out; and another that his county of Essex be left out. And so it went until six counties were omitted as the price of progress; and finally the whole bill was knifed in the back on one of the dark days of the session. The people of the Empire State still have the glorious privilege of hunting gray squirrels as "game", and eating their rat-like flesh as "food". Englishmen are amazed at us; for squirrels are eaten by no other white men on earth! This may be a digression; but it illustrates the difficulties in getting a square deal for a vanishing species, even in our own house.

These are the chief enemies of wild life:—
The millions of gunners who shoot in accordance with extravagantly liberal laws.
The market-gunners and pot-hunters, who shoot for revenue only.
The game dealers, who market slaughtered game, for money.
The plume-hunters, who slaughter for the millinery trade.

The makers of such slaughtering machines as automatic and "pump" guns.
The men who will not put on the statute books adequate protective laws.
The men who will contribute neither time nor money to the cause of wild-life protection.

Money is needed for practical, level-headed campaign work for the saving of wild life; but it seems impossible to secure more than a beggarly allowance. Recently I have asked for anything from $9,000 up to $2,000,000; but only Mr. Alfred Wilcox ever has given a large sum to aid this cause. That went to the National Association of Audubon Societies,—$332,000: and its annual income is doing grand work!

With the income of $2,000,000 it would be possible to save a satisfactory remnant of the wild life of North America; but the money comes not.

The work of the protectionists needs to be educative, repressive and con-
The effort must be continuous. The wild life of to-day is not ours, to do with as we please. It has been given to us in trust, for those who come after us, and who will audit our books of stewardship. Shall we turn over to them a desolate continent? I am inclined to fear that we will.

At this moment, I desire help with the senators and assemblymen at Albany in securing the passage of my bill to stop the sale of wild game throughout the State of New York, at all seasons. Write to your Senator and Assemblyman on this subject, and ask him to support the bill of Senator Bayne (Senate No. 513). If passed, it will go farther than any other one fair measure could go toward saving our game birds from the annihilation that threatens them. When success has been attained in New York, we will try other states near home; and even Virginia and the Carolinas.

Who will lend a hand?

A FEW THOUGHTS ON MUCK FARMING

By W. L. Bonney
Batavia, N. Y.

DURING recent years the deepening interest in agriculture and the development of its various branches, has been truly wonderful. The possibilities of the various kinds of soil are beginning to be realized.

"Up to date" methods in general farming, are proving what may be done on the average farm. New sanitary conditions in dairying, scientific methods in stock raising, fattening of lambs, etc., the new light which study and education has thrown on the problems of the orchardist, and the wonderful possibilities of the arid lands of the West through irrigation, and many other developments show that men are beginning to realize that agriculture is not only a profession but an art. Among the new developments is the drainage, clearing and subduing of the muck swamps. That old "back lot" with its few acres of muck swamp, the eyesore and dumping place of the farm, on which we were unwilling even to pay taxes, has been transformed into a productive field, producing on one acre twice as much as on any two of its upland neighbors.

I wish to state that this little article about muck land is not intended as a treatise on that subject. I am simply stating a few facts and ideas drawn from our limited experience. It seems to me that a good deep muck soil is simply an ideal deposit in which to grow certain vegetables by feeding them. I am not a chemist nor can I answer many of the whys or wherefores of the fertility of muck, but our experience has taught us that, to produce, to any degree of perfection, the crops we wish to grow (celery, onions, lettuce, spinach, etc.) we must feed them liberally. Our particular piece of muck is so situated that natural drainage is impossible. We have a system of ditches from ten to fifteen rods apart, emptying into a larger ditch which leads to a centrifugal pump having a capacity of 2,000 gallons per minute. This we operate for about a month in the spring, which reduces the water level to about two feet below the surface.

Our water supply is from springs on the upper side of the muck, thus enabling us to utilize them for irrigation in dry seasons. We like to plow our land in the fall as far as possible, allowing the frost to get in its work of pulverizing, etc. In fitting the soil the roller and disc harrow are the most important tools. We like to roll frequently to keep the muck firm and assist in capillary attraction. The secret in muck land, if secret there is, lies largely in its never-failing water supply underneath. In
sowing any seed we find it well to roll or firm the seed well into the soil, in order to hasten germination. Shallow cultivation gives best results. Great care and "eternal vigilance is the price of liberty" from weeds.

We have found that celery, lettuce, onions and spinach are well adapted to muck. Potatoes are good for subduing the ground that has been newly cleared. There are undoubtedly other vegetables which could be grown at a profit but we have been so busy trying to supply the demand for the few varieties on which we specialize, that we have had little time for experimenting. Under favorable conditions large yields of the above named vegetables can be grown on these old reclaimed swamps. But do not think that the "Mucker’s" life is strewn with roses. An old onion grower once said to me, "It isn’t all honey pie."

We have to contend not only with the usual diseases and insect pests, but the lightness and dryness of the surface of the muck, causes heavy losses from blowing out of crops in high wind. The endless variety of weeds, the rapidity with which they grow and the difficulty in killing them on this moist soil, are some of the trials incidental to muck farming.

The difficulty and bad results of maintaining so many open ditches, is another problem. We hope to solve this with tile. But as yet this is an experiment. But after all, difficulties are only stepping stones to greater achievement, if we will but use them as such.

To the man who is willing to study the conditions, to do a lot of good hard work, to add patience to perseverance and to be thorough in little details, there will be substantial reward in the development of the muck swamp, and the satisfaction of seeing an unsightly portion of the earth transformed into a garden.

BRIEF ABSTRACT OF THE ADDRESS TO THE STUDENTS’ ASSOCIATION OF THE NEW YORK STATE COLLEGE OF AGRICULTURE, FEBRUARY 21, 1911

By L. H. Bailey

THE Farmers’ Week is the outgrowth of the Agricultural Experimenters’ League of New York, an organization that was effected March 3, 1903. The object of the Experimenters’ League is stated in its constitution to be “for the promotion of co-operative experiments in the various departments of farm husbandry; for the promotion of intercourse among those studying farm problems, for the advancement of agricultural education; for the collection and dissemination of data relating to country life; and for the purpose of supporting legislation favorable to the promotion of these objects.”

Subsequently an organization was effected of the former and present students of the College of Agriculture and a constitution was adopted on February 9, 1910, which stated the name of the organization to be the “Students’ Association of the New York State College of Agriculture,” and it stated the objects of the association as follows: “(1) to supply a bond that shall unite all resident and former students of the New York State College of Agriculture; (2) to advance the interests of the College; (3) to promote country life interests at large.”

The Experimenters’ League has practically ceased to function because the College of Agriculture has not had sufficient funds to enable it to project and supervise experiments in the field in the way in which it formerly handled such work. The organiza-
tion is still in existence, however. My general position is that all organizations which represent useful work would better not be discontinued even though they are temporarily inactive, but rather that they should be reorganized and re-projected.

The Students' Association is more actively in existence, but it is not accomplishing the work that properly belongs to an organization of this kind and this is for the same reason, that is, because the College of Agriculture does not have funds with which to hold together the work of the students and to give them definite things to accomplish.

THREE OUTSTANDING PROBLEMS

It is not enough that these two societies merely exist. They must undertake something definite to accomplish. Many things need to be done for country life. I wish to call your attention to the three primary recommendations of the Commission on Country Life.

1. Taking Stock of Country Life. There should be organized, as explained in the main report, under government leadership, a comprehensive plan for an exhaustive study or survey of all the conditions that surround the business of farming and the people who live in the country, in order to take stock of our resources and to supply the farmer with local knowledge. Federal and state governments, agricultural colleges and other educational agencies, organizations of various types, and individual students of the problem should be brought into cooperation for this great work of investigating with minute care all agricultural and country life conditions.

2. Nationalized Extension Work. Each state college of agriculture should be empowered to organize as soon as practicable a complete department of college extension, so managed as to reach every person on the land in its state, with both information and inspiration. The work should include such forms of extension teaching as lectures, bulletins, reading courses, correspondence courses, demonstration, and other means of reaching the people at home and on their farms. It should be designed to forward not only the business of agriculture, but sanitation, education, home-making, and all interests of country life.

3. A Campaign for Rural Progress. We urge the holding of local, state, and even national conferences on rural progress, designed to unite the interests of education, organization, and religion into one forward movement for the rebuilding of country life. Rural teachers, librarians, clergymen, editors, physicians, and others may well unite with farmers in studying and discussing the rural question in all its aspects. We must in some way unite all institutions, all organizations all individuals having any interest in country life into one great campaign for rural progress.

We must make public sentiment along these three great lines of effort. I think it is particularly incumbent on the organizations associated with this Farmers' Week that these ideas be promulgated, and particularly that we undertake to develop a good campaign for rural progress. I have a special pride and desire that New York State should not fall behind in these great pieces of public benefit.

FARMERS' WEEK

As I have already indicated, Farmers' Week is the outgrowth of the Experimenters' League. We are now assembled in the fourth annual conclave.

The purpose of this great convention, or series of conventions, is to provide a meeting place for all those who are interested in a better country life, a forum for the discussion of any and all the questions relating thereto, and a center from which practical and vital ideas shall radiate throughout the State. It is not enough merely that we come together and discuss. The value of the Farmers' Week lies in actually working things out.

I do not expect that we can put into operation all the suggestions that are made in a great convention like this.
If we practice one-fourth as much as we preach it will be well worth our while. Our preaching must always be in advance of our practice, else our practice will be very poor. Preaching sets our ideals. We work toward them as rapidly as we can; and as we work, the ideals still travel ahead of us and lead us on. With all the progress in the extension of physical power and resources of the human race, the range of the human mind shows still greater extension. The imagination sweeps the universe and contacts every ultimate atom of the creation in a way unknown to those of former time. But the ability to perform is limited. Physical endurance is bound; time is short. So many are the new things to do that we feel the days to be growing shorter as the planet grows older; but at least some of the ideas originating and crystallizing in this convention must be applied directly on the farms and in the rural neighborhoods else the Week will be merely one of entertainment. I want Farmers' Week to function 365 days in the year.

The enterprises that converge in Farmers' Week are practically as many as the departments comprising the College of Agriculture; and in addition thereto are many social and economic movements that are not represented in our departmental organization. What the College is, Farmers' Week will be. One is to be a measure and expression of the other.

NYRK-STATE COUNTRY-BOND

All these many organizations and activities ought to be consolidated, or at least federated, into one organism for country life work. It is the first object of the Students’ Association “to supply a bond.” I now, therefore, suggest that we converge all the activities of Farmers’ Week into a York-State Country-Bond.

I do not have it in mind to organize a new society with constitution, by-laws and officers, but only to bring together all these agencies to discuss some of the questions that are common to them all. I should like to have one hour set aside each day in Farmers’ Week for a general meeting of all the organizations, for the discussion of questions that originate in the different departments and organizations. If, for example, the New York Plant Breeders’ Association were to pass a resolution in regard to the breeding of crops, its authority would be accepted by the public at once; but if it should pass a resolution in regard to agricultural education or parcels post or other general subject, the action ought to go before a general meeting and be reinforced by the authority of all the interests that make up Farmers’ Week. I should think that the administration of the College would comprise the natural officering of the York-State Country-Bond. It would in no way be a competitor of societies that already are in existence, but rather a federation and a clearing-house for the activities that naturally center at the College of Agriculture and that find their great public expression on the occasion of Farmers’ Week.

The two organizations that would be most central to the York-State Country-Bond are the Experimenters’ League standing for investigation, testing, demonstration, recording of experimental results; and the Students’ Association for fellowship and public work. The former would be concerned chiefly with questions of country life welfare, such as church and school work, fairs, village improvement, rural health, rural government leagues, business co-operation, libraries, good roads publicity, and the like.

Associated with the Farmers’ Week are a number of regular organizations, such as the Home-Makers’ Conference, State Drainage Association, New York Plant Breeders’ Association, Poultry Institute, Rural Church Conference, Vegetable Growers’ Association, Horticultural Union. There will eventually, no doubt, be as many of these organizations as there are departments in the College of Agriculture. There is always a tendency to take these departmental subjects out of the Experimenters’ League, but
there will still be need of the League to take care of the general and unseparated units.

By a proper process of welding we could have a confederation or bond of as many societies or committees as there are lines of work to be done. The extension officer in each department of the College would probably be the Secretary in the society representing that departmental line of work but the other officers should preferably be persons not connected with the College; but all these officers would be bonded together as the departments are now bonded in the College of Agriculture.

We shall need to have a regular permanent secretary of the Experimenters' League at the College of Agriculture, and also a regular secretary of the Students' Association.

It is proposed that the College of Agriculture begin soon to issue an Announcer, which will be a monthly publication, announcing all the activities of the College both in the institution itself and throughout the state, providing a means of spreading the knowledge of the bulletins through abstracts of them, and a way of propagating the reading-courses. This Announcer would naturally form a sort of organ of publicity for the different parts of the Country-Bond.

These suggestions mean, if carried out, that I am here proposing a way of organizing the extension work of the New York State College of Agriculture.

DEFINITE SUGGESTIONS

The gain in the organization of the Country-Bond, such as I have suggested, lies, first, in the very fact that it is a bond, or a union of forces; second, that it will enable us to secure unity of action on public rural questions; third, that it will bring together people of many kinds and many minds, not alone students; fourth, that it will result in the holding of a number of mass meetings at each Farmers' Week to discuss public policies which originate in the branches, groups and committees. When such a Bond speaks, after careful deliberation, the people must listen.

I am aware of the fact that I am now speaking to one of the co-ordinate branches or parts of Farmers' Week, that is, to the Students' Association. I, therefore, close my remarks with a suggestion of definite things for this Association to undertake during this coming year, as follows:

(1) The consideration of a resolution that it is the sense of this body that we band ourselves into one organism uniting all forces for a campaign of rural progress within the Empire State.

(2) That the Association express itself on the nature and work of county and local affairs.

(3) That the Association consider the feasibility of endeavoring to promote the establishment of rural improvement societies, which shall have for their object the general betterment of country life conditions in the care of roads and roadsides, of public property, river banks and lake shores, the elimination of advertising signs, controlling the depredations of the telegraph and telephone companies, spreading information in regard to trees, lawns and flowers, and in general making public sentiment looking toward the increasing of the attractiveness of the open country as a place in which sensitive persons may live.
THE SECOND ANNUAL CONVENTION OF THE
NEW YORK STATE DRAINAGE
ASSOCIATION

The Second Annual Convention of the New York State Drainage Association was held on Tuesday, February 21, in the Dairy Lecture Room of the College of Agriculture. There was a large attendance at all of the sessions and much increase in interest in the subject was manifest. Twenty-three members were added to the Association, making a total of 107. These are widely distributed throughout the state. In addition to the members of the Association, the program attracted many persons who were in attendance at the Farmers' Week program.

The first address of the meeting was by G. Wendell Bush, Manager of Arden Farms, at Arden, N. Y. He described the extensive operations which have been carried on on the Harriman estate, including the dredging and straightening of the Ramipo river by the use of a steam dredge. A number of hundred of acres of muck and swamp land have been drained and with good results in crop yields.

Mr. W. L. Bonney, a practical truck grower of Batavia, described in detail the methods which have been used by the firm of Bonney & Ware in reclaiming muck land and the production of truck crops.

Mr. Henry E. Cox, of Geneseo, read a paper in which he described in considerable detail the methods which he has found successful in handling clay land. At the opening of the afternoon session, the results of the Findlay drainage competition were announced. Four papers were entered in the contest and the award was made by Mr. C. G. Elliott, of the Office of Drainage Investigations, United States Department of Agriculture. The first prize of a solid silver cup, properly engraved and inscribed, was awarded to Mr. David M. Dunning, of Auburn, which reported the drainage and renovation of a part of a farm of 190 acres near the head of Cayuga lake. The greater part of the area had been formerly drained, but owing to imperfect workmanship the system was inoperative. The total cost of the drainage system amounted to about $41 per acre. The landlord's half of the crop for two years practically covered this expense.

The second prize, a ten dollar gold piece, was awarded to Mr. I. C. H. Cook, of South Byron, N. Y., for report upon practical drainage operations on a small farm which had been carried out over a long period of years. Many difficulties have been encountered in the way of soil conditions and outlet, all of which were described. The average cost of the system on the 100 acres has been, up to the present time, $16 per acre. The benefits in increased yields of crop have been very marked. This paper showed particularly what may be accomplished by the farmer of small means. The prizes were presented to the recipients by Director Bailey at the evening session in a felicitous speech, in which he strongly emphasized the fact that the area of land east of the Mississippi river which can be reclaimed by drainage is far in excess of the area west of that river which may be reclaimed by irrigation. He emphasized the fact that state and federal programs should be inaugurated to make use of the land now lying waste from the lack of drainage in order that the growing demands for food may be met. He recognized the fact that irrigation has a place as a farm practice in the eastern states, but pointed out that the annual rainfall is adequate for full crop yields, and that the problem of the farmer is primarily that of so conserving and utilizing his natural water supply.
that it will not need to be supplemented by irrigation, and that anomalous as it may seem, drainage actually increases the amount of moisture which is available to crops.

He spoke with special commendation of Mr. J. A. S. D. Findlay, of Salisbury Mills, N. Y., who made possible the prizes that were awarded, and recognized in this act a broad-minded citizenship, which is especially to be commended.

It was also announced at this time that three prizes, consisting of gold, silver and bronze medals, will be offered by the Association for the ensuing year for best reports on drainage, similar to those which were offered the past year. These prizes were made possible by the generosity of certain members of the Association. The conditions of the contest will be published in the form of a circular, which may be had from the Secretary or President of the Association. It is especially hoped that during the next year these contests will be carried to the local communities and that they may afford to granges and other agricultural societies the means of stimulating interest in farm drainage and improved soil management in their several regions.

Mr. C. R. White, of Ionia, spoke on ditching machines and implements, and illustrated his talk with numerous lantern slides showing various power machines, as well as the smaller implements such as plows, etc., which aid greatly in the construction of drains. Mr. White operates a Buckeye Traction Ditcher on his farm and has constructed many hundreds of rods of drains with that machine, and was, therefore, able to speak with special authority as to its usefulness. He also spoke particularly of the Cyclone ditching plow, which is being introduced on many farms in the state and which is manufactured by the Jeschke Co., of Bellevue, Ohio, and reports of the results from the use of it are quite favorable.

The discussion of the quality of drain tile was opened by a paper prepared by B. F. Lockwood on "Cement Tile" in which he expressed the opinion that the cement type of tile has many advantages over clay tile and that it can be manufactured at prices in competition with the latter. Mr. Lockwood has just installed a
machine for their manufacture and will put cement tile on the market during the coming season. A general discussion of the merits of different kinds of clay tile ensued in which the very great distinction of quality and usefulness between soft burned and hard burned or vitrified tile was brought out. In the discussion as to the size of tile, the sentiment was opposed to those smaller than three inches in diameter because of their small carrying capacity as well as their great liability to become clogged.

Mr. I. C. H. Cook, of Batavia, presented a paper on the "Admission of Surface Water to Tile Drains" in which he discussed various types of filters and the use of the silt basin for that purpose. The paper was largely the result of his own experience.

The President's address outlined the increase in interest in the practice of drainage which has occurred within the last three years, presenting figures of the sale of tile by the various manufacturers, showing that the increase had ranged from 30 to 100 percent for different dealers. The dealers noted in particular the tendency away from the use of two inch size of tile.

Attention was called to the achievement of the Association in effecting an amendment to the State Drainage law, which eliminates its former inefficiency. This law which was enacted in 1895 was declared unconstitutional in 1899 because its method in acquiring an outlet for a drainage system was in opposition to the federal constitution. The state law regulating agricultural drainage in New York was carefully studied by able attorneys for the Association, with the result that the amendment which has been enacted provides that the outlet shall be acquired by the usual condemnation procedure, and that the aggrieved party receive damage in advance of any construction operations. Some question was also raised in the court decision as to the recognition of drainage for agricultural purposes as a public benefit. A careful study of the situation seems to eliminate this as a practical difficulty, although New York State courts have been rather behind the federal court and the courts of other states in such recognition in our economic development. Under the above mentioned amendment, it is now possible for a farmer or group of farmers having undrained land deficient in outlets to acquire such outlet by simple and easy method of procedure and at a financial outlay which generally renders the operation economical and even highly profitable for the great majority of areas. A number of propositions have already been taken up upon the basis of this new provision, and it is expected that considerable activity will be developed in that direction within the next few years, looking to the improvement of drainage in many sections of the state.

The widening of the activity of the Association by means of committees for various phases of drainage practice was suggested by the President, and later provision was made for the appointment of such committees. Those which were provided was a committee on drainage of clay lands, of hill lands, muck land, sandy land, study of drainage machinery, or drain tile, consideration of drainage legislation, including state aid, and the advisability of a summer field meeting.

The evening session was presided over by Commissioner of Agriculture, R. A. Pearson, who opened the meeting with remarks as to the fundamental importance of the subjects of the discussion.

The first paper was by Milo B. Williams, of the Office of Irrigation Investigations, United States Department of Agriculture, on "Irrigation in the Eastern States" and was illustrated with numerous lantern slides, which showed various phases in the construction of irrigation systems, and the application of water to the soil.

The last paper of the evening was presented by Professor Wm. H. Day, of the Ontario Agricultural College,
at Guelph. That province, through
the Provincial College of Agriculture,
has gone much further in the promo-
tion of farm drainage than any other
section of the country. Professor
Day finds that whereas the practice of
drainage five years ago was on the
decline, since that date there
has been an increase of over 100 per-
cent in the length of drains laid.
Accurate figures on this point were
obtainable because of the records
kept in the Department of Mines as
to the amount of tile handled each
year. Professor Day finds that the
chief obstacle to the extension of tile
drainage is not so much a lack of
understanding of the methods of
construction as lack of under-
standing of the actual benefits to be
derived from the practice. These he
outlined in some detail, following
which he described the two policies
which have been developed for the
assistance of the farmer in the con-
struction of the land drainage as well
as in the extension of an understand-
ing of its benefits.

The first of these relates to the
provision of expert assistance in
planning and constructing a drainage
system. Through the College of Agri-
culture, which gives instruction in
farm drainage, there has been pro-
vided a corps of experts who are
trained in the simple methods of
surveying and leveling which are
necessary to construct a topographic
map of a farm, and design a drainage
system based on the soil and topo-
graphic conditions. This is especi-
ally helpful to the farmer in cases
where the topography is complex, the
soil diverse or the outlet a matter of
question. The salary of these ex-
erts is paid by the province through
the College of Agriculture, while their
traveling and subsistence expenses
while in the field are paid by the party
who receives assistance. Farmers
who receive such assistance are also
required to make provision for the
holding of a demonstration after the
system has been planned, and when it
is in process of construction, if pos-
sible. Under this arrangement the
coo-perator is required to submit the
name of twenty of his fellow farmers
who receive notice of the demon-
stration and printed matter which
will enable them the better to under-
stand its object. These demonstra-
tions are in charge of the experts
sent out from the College, and when
taken in connection with the practical
results in increased crop yields that
occur in the various communities they
have been found a most efficient means
of spreading the practice of drainage.

The second type of assistance
which is given the farmer is a financial
one. By the provision of an old
statute called the Timber, Stone and
Drain Act, it is provided that a town-
ship may issue debenture bonds to
raise money which will be loaned to
individual farmers in amounts not to
exceed one thousand dollars each,
for construction of farm drainage.
These bonds, when the proposition
has been properly passed upon by a
qualified expert, will be purchased by
the province, so that in effect the
money is advanced by the provincial
government. The act provides that
the money is to be repaid in twenty
annual installments, the unpaid bal-
ance bearing a low rate of interest.
From figures which have been ob-
tained upon a large number of farms,
Professor Day showed that for each
one hundred dollars worth of drainage
constructed, the annual cost under
this system would be, including the
annual payment on the principal,
less than ten dollars. This sum of
money would drain on the average
about four acres of land, and the in-
crease in yields have amounted to
about twenty dollars per acre, or
eighty dollars.

Both systems of aid have worked
very satisfactorily in the hands of
the Ontario College of Agriculture,
and the demands upon them are in-
creasing very rapidly.

The officers of the Drainage Asso-
ciation for the ensuing year are
President, Elmer O. Fippin, College of
Agriculture; secretary, I. C. H.
Cook, South Byron; and treasurer,
C. R. White, of Ionia.
A WELSH FAIR DAY
By Joseph J. Davies, M. A.

DURING the autumn of last year, it was my good fortune to spend several weeks on a Welsh farm just at the edge of the mountain country of Montgomeryshire, one of the little known portions of the principality. While there I saw many quaint customs which carried me back to an age far earlier than anything in the memory of people now living in the older portions of our country. Probably the most typical as well as interesting of the things which I saw was the great Autumn Fair which was held toward the latter part of September in the market town of Llanfyllin. This was not a fair as we know it but a great public sale when all who wished to either buy or sell cattle, sheep or other animals came together on a set date in the long main street of the village.

On Fair Day the most unobserving traveler would have noticed an unusual air of life on the little branch railway. For Llanfyllin is at the "head of navigation" on the railway, the place where the early Victorian era as exemplified by the Cambrian Railway and the age of Will Shakespeare or the Pilgrim fathers as represented by the present day life of the people on the mountain farms meet. The morning train was twice its usual length, every carriage literally crowded to the doors; while people stood in the aisle and corridor or sat on hampers of live poultry and piles of harness. Even the spaces under the seats were utilized to stow away bundles, market baskets and sometimes collie dogs. The highways leading into town from every direction were equally crowded, all traffic headed toward the Fair. The town was crowded to overflowing with stock as well as people when the morning train came in, half an hour late as is usual on the Cambrian Railway.

It was an interesting crowd that filed out of the station enclosure and climbed the hill leading up to the town. The men for the most part, were clad in suits of homespun made from the wool raised on their own farms. The color, usually a greenish or brownish drab gave evidence of the crude facilities for dyeing and finishing the cloth in the small "factories" where the farmer sends the wool to be dyed in a primitive way and woven into cloth on hand looms. It comes back to him in large rolls from which are cut the entire wardrobe of the family, often with the aid of the village tailor but sometimes at home. For these people although they had many of the characteristics of an American holiday crowd came from far different homes than ours, and lead a life amid the primitive surroundings of our forefathers in colonial days.

They slowly made their way uptown past the Congregational Chapel and the Cambrian Inn, institutions representative of the chief industries of the village in the long somnolent periods between fairs when the most hilarious social event is a funeral. First in order of the animals which were lined up along the length of High Street were the cart horses. They were of every color and size. Next were the mares and their colts. The mothers were of the usual English cart horse type, built on the same generous lines as a New York Central freight locomotive while the youngsters were uncouth little parcels of awkwardness, mostly legs, whose big bones stuck out in angular ridges and bumps. Above, the street widened and in the widest part near the town pump temporary pens had been erected to accommodate the sheep. These pens enclosed a large variety of animals from the large English breeds to the small clean limbed Welsh mountain sheep from the hill country. A few pigs were shown in the pens but most of the porkers were secured under stout nets in the
upturned market carts which lined the street in places like parked artillery. Beyond the street was given up to the cattle, each lot watched by a boy or man who prevented them joining forces with the neighboring groups.

Of course to the people who thronged the street, making it an ever shifting sea of humanity, the chief business was the buying and selling of stock, but sociable souls found time to congregate in twos and threes in the middle of the road and have a prolonged visit to the embarrassment of teamsters and herders who adroitly circumnavigated the confabulation or patiently waited until the story was told. A heavy faced Englishman from Manchester and a little man from far back among the mountains haggled over a small group of sheep beside one of the pens. The little mountaineer was excited. On the sale of those twenty or more sheep depended the profits of his farm for several months. He fairly shrieked in his eagerness to persuade the big Englishman to pay a few pence more a head for them, excitedly pointing out the good points of the animals or emphasizing his arguments by pounding on the railing with the head of his cane. But the Englishman knew his business too well to be moved and maintained an air of studied indifference, the personification of passive inertia. The little man started to walk away, but a quiet word brought him back and once more the flood gates of eloquence were unloosed. This happened several times until after half an hour's haggling the deal was made and the shilling changed hands to bind the bargain.

At the end of the sheep pens the village auctioneer was mounted on a kitchen chair while at intervals an assistant with a large bell announced
the next lot to be offered for sale and impatiently exhorted the owners to "bring them up". By the dint of much pushing, shoving and prodding a group of frightened sheep would be propelled into the center of the ring formed by the onlookers or an informal tug of war would take place between a strenuously perverse ram and his owner on the opposite end of five feet of rope which in its gyrations momentarily threatened to upset the chair on which the auctioneer was perched busily "knocking down" the apparent winner of the contest. Sheep dogs wandered about at the heels of their masters or herded sheep through the crowd. Sometimes a refractory animal would make a dash for liberty. A rush occurred in which the sheep followed by the dog and men dodged under carts and over the wares of the street merchants on the roadside. Somebody would try to stop the runaway by an approved tackle as practiced in American football which usually resulted in the well meaning one finding himself embracing a squirming protesting collie dog.

By noon the serious part of the day was over. Most of the cattle and sheep had been sold and many of them loaded on the trucks preparatory to shipment. The crowd with money in its pockets gave itself over to a half day of holiday making. This had been looked forward to for many weeks on the part of the farm servants for after the "Master" has sold his cattle he usually gives each of the men and boys a half sovereign or so as a part of their yearly wages and with this the young gallants proceeded to treat their lady friends who work in the kitchen or dairy to an afternoon of unalloyed bliss. By the bridge which spans the river "Cain", river in name only, since it has the dimensions of a fair sized meadow brook—a travelling amusement caravan had established itself for the day. The familiar sledge hammer and the weight which rose up a graduated pole
when the peg was struck, the shooting
gallery and the old reliable "cocoa
nut shy" dear to the heart of the
small boy were all there and in com-
mission. But the center of attraction
was the "hobby horses", a red and
gold merry-go-round with rocking
wooden horses on which the adventur-
ous ones rode at a penny a ride daring
the dangers of the unfamiliar method
of locomotion and the more real and
terrible perils of the displeasure of
the "unco guid" at home. The
steeds went merrily round to the
tune of a familiar Sunday School
hymn: "Sweet Hour of Prayer", if I
remember rightly, played in two
step tempo and punctuated by the
exhaust of the engine and the
whangs when the bullet struck the
target in the nearby shooting gallery.

Uptown the "Pubs" were full to
the doors. At such a fair there are
many travelling representatives of
firms in distant towns. These gentry
invariably make their headquarters
in one of the dozen or more public
houses of the place so that if you
should happen to have business with
one of them it becomes necessary for
you to literally make the "rounds of
the saloons" to find your man. This
of course makes a convenient excuse
for the men to escape the watchful eye
of their wives and spend an hour in
the congenial company of the "Pub".
Snatches of loud talking and of song
came out of the various drinking
places; while a piano hand-organ
circulated about town, playing with
strict impartiality, "She's a Lassie
from Lancashire," and "In the Sweet
By-and-By."

The sun sank behind the distant
ranges turning them to purple and
the nearer summits clad with heather
and gorse to golden brown. The
long shadows deepened and the even-
ing smoke cloud which nightly hangs
over the village when the housewives
stir up the soft coal fires preparatory
to the evening meal, softened the
outlines of the old town. Lights
gleamed from the shop windows or
from the open doorways of the "Pubs,
but the center of attraction was be-
side the placid Cain where a dozen electric arc lamps cast an unwonted splendor over the revels about the “hobby horses”.

Far into the night the lights glittered and the wooden steeds circled. Long after the seventeen lamps which serve as beacons to help the wanderer shape his homeward course at night had been extinguished and the village had gone to rest, the revels continued. In the distant farm house the night stillness was broken from time to time by the singing of the merrymakers on their homeward way. Some lifted up their voices for the sheer love of music, but others—and I speak it softly—sang to keep up their courage. The fairies, elves and brownies, driven out of other countries still find asylum in the Celtic lands. We all know what happened at Alloway Kirk one night and many of the worthies of Llanfyllin know that certain dwellers in the hills have oftentimes met ghosts on their homeward journey, especially on Fair Nights when ghosts as well as mortals seem to be on pleasure bent. An inconsiderate ghost hurled his head at one of them, despite the fact that he had taken elaborate precautions to protect himself from supernatural molestation, such as for instance, swallowing a raw red herring entire from the head even unto the tail thereof at one sitting. So the ones who looked long at the wine when it was red at the “Wynnstasy Arms” or the “Bala” fortified themselves and increased their courage by singing appropriate selections as they passed through the dark places on the road. “Lead Kindly Light” was a favorite. There was soul in the words for the singer entered deeply into the spirit of the song especially the lines “The night is dark and I am far from home,” etc. It was spontaneous, it was sincere, it was true art.

But rising above nearby sounds, softened by the distance came the oft repeated strains of the hand-organ by the gently flowing Cain ever playing “Sweet Hour of Prayer” until carried on the wings of sacred song the listener entered the Land of Nod.

### CARE OF THE WOODLOT

**SUMMARY OF LECTURE DELIVERED BY WALTER MULFORD, FARMERS’ WEEK, 1911.**

**BRIEFLY,** the woodlot is useful for its wood, for its welcome or scenic effect, for its capacity to conserve water for surrounding regions, and for windbreaks. It responds to care by quickened growth and by yielding better quality wood. This care should yield money returns within a reasonable time by timber, now partly grown, reaching merchantable size sooner; and by increased sale value in the near future, of land containing thrifty young timber even when not large enough to cut.

The first things to do in working for better quality and for faster growth are:

1st. Help the better kinds of trees, and discourage the poorer ones, when cutting.

2d. Keep a mulch of leaves on the soil, and keep the grass off. A leaf mulch acts as irrigator, cultivator and fertilizer, whereas grass uses much water and means much less mulch. Also keep out fire; do not pasture; have the ground well shaded; and grow a wind mantle.

3d. Thin out when too crowded. Don’t thin too fast or there will be danger of knotty timber and of losing the leaf mulch. Don’t thin so heavily that more than one-third of the ground is exposed to the sun after cutting; unless there is a special reason for doing so, don’t take two trees whose crowns adjoin—this applies to thinning, not to the final harvesting of the crop. Holes made in thinning should be filled up within a few years by growth of crowns of neighboring trees.

4th. Plant the open places if nature does not do it satisfactorily.
THE SECOND ANNUAL EASTMAN STAGE IN PUBLIC SPEAKING

Photo by La Son

C. L. Zinssmeister, '14, 2nd prize
T. E. Elder, '12

EASTMAN STAGE.

David Elder, '12, Winner
W. H. Hook, '12

H. B. Knapp, '12

THE Eastman Stage was held in Sibley Dome on Friday evening of Farmers’ Week. Although there were several other important functions on this same evening, the Dome was well filled with a very appreciative audience. The program was opened by the singing of the Alma Mater by the audience. Selections with encores by the Glee and Mandolin clubs were then given. Dean Bailey, the presiding officer of the evening, made some pertinent remarks regarding Farmers’ Week, and before introducing the contestants, read a letter from Mr. A. R. Eastman, the founder of the Stage. Mr. Eastman resides at Waterville, N. Y. but is spending the winter in Florida. In the letter he expressed his keen regret at not being able to be present at the contest.

The first speaker on the program, Halsey B. Knapp, '12, took for his topic “The Farm Boy and the Agricultural College.” He was followed by Carl E. Ladd, '12, who discussed “Agriculture in the High School.” “Commercial Co-operation—Its Importance to the Farmer” was the subject of the third speaker, C. L. Zinssmeister, '14.

Between the halves a Quartette of agricultural students, members of the University Glee Club, gave some selections which were thoroughly enjoyed by the audience.

The first of the other three speakers was Wallace H. Hook, '12, who discussed “The Agricultural Advantages of New York State.” T. Edwin Elder, '11, spoke on “The New South—The Land of Opportunity.” The sixth and last speaker, David Elder,
'12, spoke "For a Parcels Post.” For two or three minutes one might have thought that the express companies were represented by the steam pipes on the stage, which gave forth canon-like reports in an apparent attempt to drown out "Dave," but he was not bewildered by their thundering and they soon quieted down.

The judges for the contest were Prof. E. H. Woodruff of the Law College; Mr. W. G. Bean who is a farmer of McGraw, N. Y. and treasurer of the New York State Grange; and Mr. E. A. Tuttle who is a farmer of Eastport, L. I. and vice-president of the N. Y. S. Agr. Soc.

While the judges retired to ponder over the difficult task of choosing the winners, the audience was entertained by the String Quartette and the Glee and Mandolin Clubs. The silver cup won by the General Agricultural Club in a series of debates between the different Winter Course clubs, was presented at this time by Dean Bailey.

Prof. Woodruff then announced the decision of the judges, David Elder of Pattersonville, N. Y. being awarded the first prize of $75, and C. L. Zinssmeister of New York City the second prize of $25.

Prof. Woodruff then made a few remarks in reference to the contest. He complimented on the uniform excellence of the speakers, saying that the Stage compared very favorably with the other stages which are open to all students of the University. He also brought out the importance of having more and better leaders among the farmers for advancing their business and social interests. Following these remarks, the program was ended by all joining in the Evening Song.

The speakers in this contest have set a high standard for future contests and are to be congratulated upon their good work, which is an honor to our College. All of the contestants are agreed that the experience obtained far more than repaid them for their efforts. The Eastman Stage is already one of the principal features of Farmers' Week and bids fair to become the main event, in the near future.

FOR A PARCELS POST

By David Elder, '12

EDITOR’S NOTE—This article won first prize in the Second Annual Eastman Stage, held in Sibley Dome, during Farmers' Week, Feb. 24, 1911.

THE success or failure of agriculture or any other enterprise is today dependent upon transportation. Means of transportation, even eclipsing great natural resources, determine the location of our great cities and shape the industrial map of a continent. Rates of transportation determine the cost to the consumer and the returns to the producer. In our extensive and civilized country we are so dependent upon transportation that any excessive cost which a farmer pays for the distribution of his products is a serious drain upon his business, a limitation to his activities and an obstacle to his success. Many farm products, to reach the consumer in a fresh condition must be sent by express. In the United States the interests of both producer and consumer demand cheaper express rates and better service.

Now it is an economic principle that government operation of public utilities is justifiable when it secures a utility otherwise impossible, better service or a lower price. Recognizing this principle, every great country in the world except the United States, provides for parcel transportation through the post office. The parcels post system, established in Germany nearly 150 years ago, is now in operation in all the important countries of
the world except the United States and our foreign consuls tell us that no arguments for or against the service, such as one hears in the United States, are ever raised. The system has been developed until now they handle articles up to 110 pounds in weight.

The extortionate parcel rates of the United States Post Office Department give the express companies a monopoly on parcel transportation in this country, which is not controlled by the natural laws of competition. The results of this monopoly, with which you are all familiar, stand in striking contrast to the service of an up-to-date parcels post system.

It is hardly necessary to remind you of last November, when the express drivers' strike in New York City allowed thousands of dollars worth of perishable products to rot, undelivered, while the German Parcels Post was making daily deliveries in New York City, delivering German products to the residents of New York with as great regularity and certainty as we receive our letters and daily papers.

But infinitely more important is the fact that the express companies make no deliveries outside the towns and cities, leaving the great mass of American farmers, representing a third of the country's population totally unprovided for, while the rural carrier goes on his daily route with only 25 pounds of mail. Former Postmaster-general Meyer said he could carry several times as much at no additional expense to the government, and three eleven-pound packages handled each trip on the rural routes already established would, even at the low rates proposed, not only put the rural routes on a paying basis, but would wipe out the entire deficit of the postal service.

Our foreign consuls tell us that the European farmers use the parcels post to ship to the cities their butter, eggs, fruit, vegetables and flowers "to actual consumers thus competing directly with the retail provisioning establishments of every city." Thus the European parcels post is actually solving the great problems of transportation and distribution, directly from producer to consumer, with the elimination of the middleman. In these days when the producer gets only thirty-five cents out of the consumer's dollar, the parcels post is a burning question. The Country Life Commission after an exhaustive study of these problems said: "We hold that the parcels post is a necessity."

We have seen that the express companies make no deliveries for the farming population and that they are liable to be tied up by strikes at any time. For their incomplete and unsatisfactory service they charge rates unheard of in any other civilized country. The express rates on eleven pounds from New York to San Francisco is $1.65. The English parcels post rate from London to San Francisco is only $2.25. Any man in Germany can mail an 11-pound package anywhere within a radius of 10 miles for six cents; to any postoffice in Germany for 13 cents; and to any post office in the United States for 80 cents. No man in the United States can mail an 11-pound package to his next door neighbor. If you or I wished to mail 11 pounds of merchandise from Ithaca to Forest Home we would have to first wrap it in three separate packages and then pay $1.76 postage; 96 cents more than the German rate delivered in the United States; $1.51 more than the English rate delivered anywhere in this country, and 44 cents more than is charged in the International Postal Union which delivers to practically any post office in the civilized world.

We have a merchandise rate to foreign countries of 12 cents a pound while the rate within the United States is 16 cents. This makes it possible for a man living on an Ithaca R. F. D. route to mail an 11 pound package to his friend over in London, have him remail it to Ithaca, do it 19 cents cheaper than he could mail it directly to Ithaca and be relieved of the trouble of wrapping it in three separate packages.
In view of the fact that many parcels are sent in more than four pound packages, and generally between points in this country and not to foreign countries, these rates sound ridiculous. But they sounded perfectly logical to a certain senator from New York who was president and lifelong director of the United States Express Company; for this company says in its Articles of Association and Agreement that no "director herein named, or that may hereafter be elected, shall be concerned or interested in any business or thing detrimental to the interests of said company, or in opposition thereto." Aside from this obligation, he probably received at least ten times as much salary as president of the company as he did from his office as senator. Receiving ten times as much salary wouldn't he work ten times as hard to live up to its "articles of association and agreement" and keep down parcels post legislation, as he would to "preserve, protect, and defend the Constitution of the United States."

"Who's Who" for 1911 shows that the senior senator from New York today is not only chairman of the board of directors of the four great "New York Central Lines" but is director of 34 other railroads. These roads not only haul the cars of practically every express company in the country but they dictate their price of 9 cents a pound for carrying United States mail and the Post Office Department must pay it. If the Post Office Department reduced the rates paid the railroads for carrying the mail, Mr. Depew would decree tomorrow that the New York Central lines would no longer handle U. S. Mail, and under the existing laws, the Postmaster-general would be powerless.

The Postoffice Department has been trying for years to reduce the exortionate parcel rates, and to reduce the price paid the railroads for carrying the mail; but a few men (?) in Congress said "no" and, in spite of the recommendations of President Roosevelt and President Taft, these rates have not only been maintained but they are twice what they were way back in 1874.

When John Wanamaker, the father of our Rural Free Delivery Service was Postmaster General, he said we could handle parcels for one-twelfth their present cost in this country, but there were just four reasons why a parcels post was not established. His first reason was—the American Express Company, his second reason—the Adams Express Company, his third reason—the United States Express Company, and his fourth reason—the Wells Fargo Express Company.

Today these companies stand as they did twenty years ago, four gigantic parasites upon the American industrial system. The United States Postoffice Department has to handle all the unprofitable part of the business while struggling under an enormous deficit. All the profitable part is handled by the express companies. The year 1909 when our postal deficit was $17,400,000 the Wells Fargo Express Company declared a dividend of 300 percent after paying enormous salaries to a large corps of officers and directors. In 1907, the Adams Express Company issued $36,000,000 in bonds to its shareholders as a means of getting rid of its surplus earnings.

There is money in the parcel business. The United States is the only important country in the world which does not have a parcels post and the only important country in the world whose post office does not pay a profit. Secretary Meyer said that if the United States Post Office Department were a modern business corporation its board of directors wouldn't hesitate 48 hours to utilize the machinery we already have and establish a parcels post on the rural routes.

The editor of the Independent said only last month: "We believe that the American people almost without dissent demand a parcels post service; and that if put to a popular vote this demand would be expressed by a majority of 90 to 1 the country
over. We believe that the next step of social and economic progress in the United States is unquestionably bringing the producer and consumer together by reducing the cost of carrying small parcels.” Last April there appeared before the House “Committee on Post Offices and Post Roads” representatives of 10,000,000 voters demanding a parcels post. Among these were representatives of the National Grange, the Farmers’ Union and the Farmers’ National Congress, each of which represents a membership of 3,000,000 farmers. The great labor organizations representing the consumers’ point of view are demanding it. Some of the ablest experts in the country appeared before that committee with arguments and statistics enough to convince any unbiased man. But the opposition to a parcels post in this country does not rest upon argument or logic or theory, but solely upon the power of the special interests to control Congress. Yet there is not a man in Congress today who does not depend for his office, directly or indirectly, upon the votes of those whom he represents. There is but one way to get a parcels post, and that is for us to decide at the ballot box that it shall no longer be possible for the demands of 90,000,000 people to be subordinated to the dictates of a few monopolies and special interests.

Our forefathers when only three million in number had the courage to declare their political independence to every other nation. Shall we who have grown to ninety millions calmly submit to industrial dependence? Rather let us highly resolve that, with a confidence in the righteousness of our cause, we will not permit ourselves to depart one step from that immortal principle that the “government of the people by the people and for the people shall not perish from the earth.”

THE FIRELESS COOKER

By Clara Browning, ’12

The fireless cooker is gaining such favor with the up-to-date housewife, that every woman, undoubtedly, would like to have one if she could afford it. Now a fireless cooker can be made with very little trouble and expense. Centuries ago the Norwegian woman, after heating food, packed it in hay, to keep it hot to continue its cooking. Though she did not know it, she was putting into practical application two simple scientific principles.

The first is simply this: Some materials are not good conductors of heat. Therefore, wool, excelsior, shredded paper, hay, etc., are used as non-conductors. A kettle of hot food is well packed in one of these substances and the heat, unable to pass out, must stay in to cook the food.

The other important principle is this: Boiling food never gets hotter than 212°F. More heat only produces steam. Hence heat beyond that necessary to keep the food at 212°F. is wasted.

Why not, then, heat food to the boiling point, remove it from the stove, and keep it at this high temperature by surrounding it at once with some heat-retaining material, thus saving additional fuel? This is exactly what is done by the fireless cooker.

We see, at once, that the essentials for a fireless cooker are few:

1. A kettle for the food.
2. Some non-conducting material as packing.
3. A tight box in which to hold the kettles and packing.

We will consider each in turn.

The kettle or pail should be made, preferably, of granite or aluminum ware as tin rusts. It must have a tight-fitting cover, straight parallel
sides and should at least be as high as it is wide.

Some good non-conducting materials are excelsior, wool, hay, paper, shavings, and asbestos. Some of these retain odors and so have to be replaced now and then. All are inexpensive and easily obtainable.

The box should be strong without open cracks because it, too, helps to hold the heat. It must have a tight fitting cover on hinges and must be fastened with a hasp.

Let us illustrate the construction of a fireless cooker, using newspaper as packing. First determine the size of the pail. It should be large enough to hold enough food to keep hot as a little food will soon cool. If a small quantity is to be cooked, it may be placed in a smaller pail set into a larger one containing water. The water is in sufficient quantity to hold heat for several hours. Then allowing at least four inches on every side for packing (more may be allowed to advantage) select the box. This should have a heavy, hinged cover. It will be well to line the box neatly with sheet asbestos. Then in the bottom to a depth of four inches pack firm layers of paper. On the top and center of this place the covered pail. The space around the pail should be filled with excelsior. The removal of the pail will leave a firm-walled hollow like the pail. But for safety a cloth lining may be made to fit into this in order that the shape may be kept. On top of the pail and filling the rest of the box completely should be either layers of excelsior or a cushion of some kind. This, too, must be at least four inches thick. The outside of the box may be painted or stained and the cooker is complete.

Now what particular advantages shall be gained from it?

1. We save fuel. This is especially true if the fuel is gas or alcohol for just as soon as the food is heated through the fire may be turned off and the cooker will complete the cooking.

2. We save time and labor in preparing meals. They can be prepared at a convenient time and put into the fireless cooker. The meal will then be ready to serve hot, on time. The labor of dish washing is also reduced because food never burns on to the kettle. And since there is no danger of burning when the food is put into the cooker, our care of it and anxiety ceases. Of course the utensils which hold the food should be very clean. They ought to be sterilized. Care should also be taken that the food does not grow gradually cold. Gradual and long cooling and unsterile dishes offer opportunities for food to sour or spoil. But it is a simple matter to have the kettle clean and to have the cooker so well constructed that contents will keep hot. Quick cooling when it is removed is as necessary as in other means of food preparation.

3. There is less waste of food. It does not shrink so much from the loss of water as in ordinary cooking and there is no loss from sticking to the kettle.

4. Food cooked in this way tastes better. All the flavor which usually escapes as odor, is kept in the food. Consequently there is no odor of cooking.

5. The food is more easily digested. This is due partly, to the improved flavor, because wholesome, natural flavors cause the digestive juices to flow more readily. In some cases the increased digestibility is not due alone to flavor. Meats and eggs when subjected to quick, high temperatures become hard and tough. The long slow cooking in a fireless cooker makes them deliciously tender. Cereals and all starchy foods are also improved by this same method of cooking. For this fifth reason, if for no other, the fireless cooker should commend itself.

Many good fireless cookers are on the market if one does not want the trouble of constructing one at home. The later ones are lined with nickel and for that reason are more sanitary.
THE FIRST LIVE-STOCK INSTITUTE

SINCE Farmers' Week, 1910, the faculty of the Department of Animal Husbandry and the students especially interested in that Department discussed often the feasibility of holding a live stock institute or convention during Farmers' Week. This would include an exhibit of live stock and lectures on live-stock subjects by the faculty here and by breeders from around the state.

At the beginning of this college year these opinions and sentiments took definite form and a committee was elected from the Round Up Club, the informal organization of Animal Husbandry students, to go ahead and see what could be accomplished this year.

The committee sent out a large number of letters to the live stock breeders of the state to find out their sentiments. The responses were indeed gratifying. Due to the cooperation of the breeders, the Live Stock Institute of Farmers' Week, 1911, was made possible.

THE LIVE STOCK INSTITUTE

The old barns of the College held the live stock exhibit. In the old cow stable and covered barnyard temporary pens were erected which were filled with sheep and swine exhibited by neighboring breeders. A complete list will be given later.

One row of stanchions held some of the College dairy herd and three steers, two of which were killed for the meat demonstration. The cows shown were all representatives of the well-known Glista family of Holsteins. As a matter of interest Glista Theta, one of the older cows, gave birth to a fine heifer calf on Thursday night. In the covered barnyard were three colts bred by the College.

Beyond the barnyard was the piggery containing the College herd of Cheshire swine. Most of these were listed for Friday's sale.

On the main floor is the horse stable. Here were exhibited two of the University work teams, the big Belgian geldings, Jacque and Jean, and the team of black Percheron mares. The team of driving mares was also on exhibition. The Percheron stallion, Negro, and the Hackney stallion, Volunteer, attracted the attention and admiration of the visitors.

The horses exhibited by neighboring horsemen were as follows: A bay Percheron stallion by Mr. Darwin Rumsey, who also exhibited a team of grey Percheron mares. Mr. F. S. Peer very courteously put on exhibition his black three year old Percheron stallion and his Hackney pony stallion. Mr. C. E. Seaman exhibited a German Coach stallion.

As the visitors went down into the basement we will follow their course between the two rows of pens, going down on the right and coming up the left side, taking each by number.

(1) Two Chester white sows exhibited by E. S. Hill of Freeville, (2) a Rambouillet ram exhibited by Mr. Markham of Avon, N. Y., (3) Yorkshire sow exhibited by Mr. Secord, Trumansburg, N. Y., (4) Duroc Jersey sow, (5) Poland China sow and two Essex sows, both pens exhibited by D. H. Townsend and Sons, Lodi, N. Y., (6) Berkshire boar exhibited by C. L. Buck, Groton, N. Y., (7) Two Berkshire pigs, 4 months old, (8) two Berkshire pigs, 10 months old, both pens exhibited by P. H. Benedict, McLean, N. Y. (9) Large Yorkshire boar exhibited by Mr. Secord.

Going up the other side the first pen contained (1) Rambouillet ewes exhibited by Mr. Markham of Avon, N. Y., and C. V. Wellman of Perry, N. Y., (2) Southdown sheep exhibited by Mr. Secord of Trumansburg, N. Y., (3) Southdown rams, same exhibitor, (4) Shropshire ewes exhibited by Mr. Davis, Ludlowville, N. Y., (5) Shropshire rams, same exhibitor, (6) Hampshire ewes exhibited by E. S. Hill, Freeville, N. Y., (7) Hampshire and Suffolk rams also shown by Mr. Hill, (8) Dorset ram and ewe exhibited by Heart's Delight Farm, Chazy,
N. Y., W. H. Miner, proprietor, C. E. Hamilton, manager. These were beautiful individuals of the breed and attracted considerable attention.

In the covered barnyard were seven pens of sheep all exhibited by D. H. Townsend & Sons, Lodi, N. Y. Their exhibit included the following breeds: Rambouillet, Cotswold, Lincoln, Cheviot, Dorset and Black Faced Highland. A great part of the success of this First Institute must be attributed to the courtesy of D. H. Townsend & Sons.

Upstairs were the sheep and lambs of the College herd. The little lambs were great favorites among our visitors of the fairer sex.

The first lecture of the week was given Monday at 9:00 by Prof. H. H. Wing on “The Treatment of Cows Before, During and After Parturition.” This subject was continued in lectures on Wednesday and Friday morning. These lectures proved extremely popular. At 9:00 Prof. E. S. Savage gave his regular lecture on “Feeds and Feeding”. On Monday afternoon there was the regular student practice in judging. At 7:30 the Round Up Club held its regular meeting. The program consisted of brief discussions by about fifteen of the students on “Animal Husbandry in My Home Locality.”

Tuesday started off with a lecture by Professor M. W. Harper on “Outlook for Meat Production in New York State”. At 11:00 Prof. Wing gave his regular Short Course lecture on “Breeds and Breeding.”

Tuesday afternoon was devoted to a Horse Demonstration in the Judging pavilion which was very ably conducted by Prof. Harper who again emphasized the need of heavy horses on our New York farms and also the demand for them in our large cities.

On Tuesday evening one of the most instructive meetings of the week was held, a Round Table on Swine Production, led by Hon. C. J. Huson of Penn Yan, N. Y. There was a large attendance and those present voted it a decided success.

Wednesday morning at 9:00 Professor Harper delivered a lecture on the “Outlook for Horse Production.” Professor Harper is a close student of this subject and gave the farmers many valuable suggestions which if carried out would put the horsemen of New York State on a competing basis with those in the West.

On Wednesday afternoon was held a cow judging contest open to all Farmers’ Week visitors but not to students. Great interest was shown in this event there being forty-eight contestants.

At 4:00 p. m. another very instructive Round Table was held. This time the topic under discussion was “Cow-testing Associations.” The meeting was conducted by A. J. Nichol of Delhi, N. Y.

Wednesday evening was devoted to an Informal Live-stock Discussion and a social hour. The meeting was held in the Animal Husbandry library. Over a hundred guests were present. “Uncle Billy” Smallwood of Warsaw, N. Y., did much to enliven the program. After about an hour of informal discussion, refreshments consisting of milk, doughnuts, crackers and cheese, were served by the committee. To sum up this gathering would be to say that everyone had a mighty good time.

Thursday morning at 10:00 a. m. Professor Harper gave a lecture on “Horse Breeding in New York”.

The meat demonstration on Thursday afternoon attracted a large crowd. The carcasses of two steers grown at the College were cut up and the parts listed with their prices on the blackboard. There was also a hot house lamb demonstration.

The six stallions on exhibition were paraded this afternoon.

Thursday night was the big night and the meeting was held in the auditorium. Professor H. H. Wing presided. First the prizes for the Cow-judging Contest were awarded. Professor Wing then introduced Professor C. S. Plumb of Ohio State University who is well known to all students of Animal Husbandry. Pro-
THE LIGHT HARNESS STALLIONS EXHIBITED DURING FARMERS' WEEK.

Hackney Pony Stallion, owned by S. E. Peer, Ithaca.

Hackney Stallion, Volunteer, owned by College of Agriculture.

German Coesh Stallion, owned by C. E. Seaman, Ithaca.
Professor Plumb delivered a most interesting address, which indicated an enormous amount of thought in its preparation, on "The Relationship of Geography and the Blood Lines of a People to Live Stock Development." The lecture was illustrated by a large and excellent collection of lantern slides.

The next speaker was the well known Holstein breeder and business man, Mr. E. A. Powell of Syracuse, N. Y. Mr. Powell delivered a short but forceful and eloquent address on "Business Prospects and Opportunities of Live Stock Breeders."

Friday morning Professor M. W. Harper delivered his fourth lecture, "Care and Management of the Work Horse." This lecture was particularly interesting and instructive to the farmers who must every day take care of work horses.

Friday afternoon was devoted to an auction sale of the surplus stock of the College. The Animal Husbandry building was crowded to its limit with prospective buyers and interested spectators. The cattle sold comprised two three-year old Holstein heifers, one yearling Holstein heifer, two Holstein heifer calves, five Holstein bull calves and two Jersey bull calves. These animals sold for $1,052.50, at an average of $87.71.

Besides the cattle there were sold 18 Cheshire sows and 7 Cheshire boars for $456, at an average of $18.25. This makes the total realized from the sale $1,508.50. The highest price received for an animal was $250 for one of the three-year old heifers. Two of the sows brought $35 a piece.

The Department is well pleased with the results of the sale.

An illustrated lecture Saturday morning by Professor Harper on "Training the Colt" concluded the program of the week.

The faculty and the committee in charge feel well satisfied with the first Live Stock Institute. Large numbers of people visited the exhibit of pure bred stock, which though few in numbers was high in quality, and the members of the committee who were on duty in the barns can vouch for many a lively and interesting discussion among our visitors. The lectures, demonstrations and round tables were crowded with interested listeners and questioners. The farmers were interested in all that the Department conducted.

However, the feeling of all concerned is that this undertaking is capable of great development. The breeders are interested and willing to back the project. With enthusiasm among the faculty and students and with hearty cooperation from the live stock breeders of the State, Farmers' Week of 1912 should include a Live Stock Institute of double the proportions of this our first but decidedly successful beginning.

Before closing the story of the First Live Stock Institute those in charge wish to express their sincere appreciation of the cooperation and interest of all those who supported our official program and to those breeders who at considerable inconvenience and expense brought their stock here for exhibition.

THE CORN SHOW

One of the features of Farmers' Week was the Corn Show held in the Farm Crops Laboratory. The room was attractively decorated with red and white bunting and with sample ears of corn hung upon the walls. The exhibit proper consisted of three parts, the Farmers' Exhibit arranged along a table at the west side of the room, the Educational Exhibit on the middle table, and a School Childrens' Exhibit on the east side of the room.

In the Farmers' Exhibit there were over seventy entries consisting of the different varieties of flint and dent corn. In addition, there were several entries of sweet corn.
On the middle table there were many instructive exhibits, Mr. Edward F. Dibble's collection of varieties of corn adapted to New York State deserves special mention. The ears of corn from cooperative variety tests which Prof. P. J. White has been carrying on for the past two years in six different localities in this state were shown. The Department of Farm Practice exhibited some results from ear-to-row tests using Pride of the North corn. From certain of the ears over a bushel of well formed ears of choice corn was grown while from other ears of the same lot less than half a bushel of a much inferior type was obtained. Fifteen varieties of potatoes grown in a variety test by Mr. A. J. Nicoll, Delaware County, N. Y., were at one end of the table.

Samples of each of ten varieties of soy beans were sent in by Mr. A. Collson, Elmira, N. Y. Soy beans when grown with corn make an excellent silage corp. The medium Yellow variety seemed best adapted, for the seeds are well grown but not over ripened when the corn is in best condition to cut and the vines make a vigorous growth; a growth of over four feet in some cases.

The Nature-Study exhibit sent in by children from the rural schools was very interesting. There were samples of corn which had been judged by students of the College of Agriculture. Most praiseworthy specimens of work done in the rural schools were shown.

The students in charge of the Corn Show were as follows: H. B. Knapp, '12, general chairman; H. E. Dibble, '12, chairman of the exhibition committee; F. M. Briwa, Sp., chairman of the judging committee; T. J. McTarnaghan, '12, chairman of the decoration committee; and J. B. McCloskey, '12, chairman of the educational exhibit committee.
THE ELEVENTH ANNUAL BANQUET

THE Eleventh Annual Banquet of the College of Agriculture was held in the Armory on Friday evening, February 17. During the previous week busy committee-men had besieged the halls of the College and on every side was heard the familiar greeting, "Have you bought your ticket for the Ag. Banquet?" When the four hundred Agriculturists sat down to the tastily decorated tables, nothing was lacking to make the affair a success. And a success it was from every standpoint.

The tables presented a most pleasing appearance, decorated as they were with palms, ferns and potted flowers from the College greenhouses. The speakers sat at an elevated table along the north side of the Armory. Just to the west of the speakers’ table were members of the Agricultural Glee Club who, between the courses, led the banqueters in many a hearty song. Instrumental music was furnished by G. B. Birkhahn, '11, D. E. Smith, '14, W. A. Hutchison, '13, and J. P. Sanderson, Jr., '14.

After full justice had been done to the ample dinner, Dean Bailey acting as toastmaster announced the first speaker, T. Bradlee, '11, who discussed the subject of "Unity". He pointed out the rapid expansion of the Agricultural College during the past few years and expressed a fear lest with our rapid growth, we become so engrossed in routine duties that we forget our debt to the College. Our work is carrying us into so many different fields that we, as a student body, are becoming divided. The thing to do, he stated, is for every student to get out and boost the College; support the teams and enter into some form of activity.

Prof. G. W. Cavanaugh next spoke of the relation between student body and faculty. He said that only a few years ago there was a wide gap between the students and faculty, now there is harmony. He related how, in former days, the students were wont to bring livestock into the lecture room. Now the tables are turned; the teacher leads in the animal and calls upon the student to discuss its points.

For the third speaker of the evening, J. W. Lacey was introduced to represent the short course men. The winter course men who go out from Cornell, said Mr. Lacey, are among the most valuable of the representatives of our college. These men will go directly to their farms in all parts of the state and will thus wield an immediate influence for better farming.

David F. Hoy then entertained the company with a few "Reminiscences." He spoke of the growth of the University, especially the growth of the College of Agriculture during the past twenty years. When he came here instruction in Agriculture was given in Morrill Hall. Professor Roberts taught a course embracing Animal Husbandry, Dairy, Agronomy and the plant industries. Now these subjects are divided among a large faculty. In closing, Mr. Hoy congratulated us on the high standard of scholarship maintained in the College of Agriculture.

Lastly, Dean Bailey spoke a few inspiring words. The growth of our College is depicted in the growth of the Annual Banquet which, he predicted, would before many years find the Armory too small. He outlined his plan of an ideal banquet which he hoped to see after the completion of the New Home Economics building where each student should contribute something of his or her own personality to the success of the whole affair.

When the toasts were over, all joined in singing the Evening Song after which the banqueters departed for their homes.
Farmers' Week of 1911 is now history.

A Review

Again, we can congratulate ourselves because this year there was unquestionable improvement in many respects over the meetings of former years. Especially notable was the smoothness with which everything progressed, the absence of conflicts and consequent congestion of bewildered visitors in the corridors. Congratulations are due all those who executed the plans and the scheduling and to those students who handled so well the details of directing the crowds.

There is no doubt but that the program excelled that of former years, not only in the number of lectures and lecturers but in the diversity of subject matter treated. No seeker of information was turned away unanswered. Every phase of agricultural activity and many closely related activities were more or less fully discussed as opportunity allowed.

Especially notable and indicative of growth was the large number of conventions whose meetings were included in this one great "Farmer's Convention." Nearly every large Department of the College is now represented by an association. These latter held meetings full of live discussion and enthusiasm. There were too many of these meetings to enumerate here but reports of all are recorded in the first part of this issue.

This Farmers' Week also witnessed the formation of new associations. The Department of Animal Husbandry enlarged its usual Farmers' Week activities into a Live Stock Institute. In addition to numerous lectures, demonstrations, round tables and one big evening meeting in the auditorium there was an exhibit of pure bred livestock. Besides the college herds, animals were exhibited by neighboring breeders. This year marks but the beginning, the future will see great development in the live-stock exhibit.

Prominent among the results obtained was the formation of "The York State Country-Bond." Its purpose is to bond together for the purpose of bettering country life all who have at any time been connected with this institution. This organization has a wonderful opportunity for service. It is the duty of every one of us to support it.

But the great result after all is the enthusiasm that abounds and is taken away by our visitors. As one alumnus remarked, "If any person can spend Farmers' Week here without being filled with enthusiasm there is something wrong with that person!" We agree with the alumnus.
When our forefathers settled this State they existed largely by hunting the wild animals which abounded in our virgin forests. With the hewing out of homes from this wilderness the game retreated to the wilder, non-tillable spots. In this day we hunt not because we need food, but for sport. Good sport we commend, but sport not restricted by adequate legislation is too often the excuse for the "game hog" and pot hunter.

For a long time, we fear too long, the citizens of the State and of the nation have been indifferent to the ravages made upon our wild game. We are now waking up but the conditions that affront us are appalling. These conditions are presented much more vividly than it would be within our power to picture them in the article written by William T. Hornaday for this issue. Mr. Hornaday is widely known as a student of nature, an earnest game protector and a sportsman of the highest type. His words have great significance.

As an outgrowth of the sentiment against the slaughter of wild game and its sale on the market a well known game protector has drafted a bill prohibiting the sale of all wild game within the boundaries of New York State. This measure will be introduced in the State Legislature by Senator Howard R. Bayne and will be known as the Bayne Bill.

In writing of the Bayne Bill, Mr. Hornaday says: "The action proposed by this measure can not come a moment too soon. It is fairly beyond question that the killing of wild game for the market, and its sale both in the "open season" and out of it, is responsible for the disappearance of at least fifty per cent. of our stock of American feathered game. It is the market gunner, the game-hog who shoots "for sport" and sells his game, and the game dealer, who have swept away the wild ducks, the ruffed grouse, the quail and the prairie chickens that thirty years ago were abundant on their natural ranges. Today, the waters of Carrituck Sound are a wholesale slaughter-place for migratory wild fowl with which to supply the markets of Baltimore, Washington, Philadelphia, New York and Boston.

The State of New York does not permit game killed within her own borders—and fully identified beyond the reach of trickery,—to be sold during her closed season; but the Empire State does permit the sale, all winter long, of game that has been killed in other States and shipped surreptitiously to New York!

All our feathered game is rapidly slipping away from us. Are we going to save anything from the wreck? Will we so weakly manage the game situation that later on there will be no legitimate bird-shooting for our younger sons, and our grandsons?

It is the duty of every true sportsman, every farmer who owns a gun, and every lover of wild life, to enter into the campaign for the passage of Senator Bayne's bill. Every citizen who believes in the justice of this cause should request his representatives in the legislature to vote for the Bayne bill to prohibit the sale of game; and he should do it immediately."
The February Assembly was held Thursday evening, February 2d. Although the fact of its coming during Block Week cut down the attendance somewhat, those present declared it one of the most pleasant gatherings of the year. The musical numbers included a vocal solo by W. J. Corwin, '11, and a violin solo by D. Finkelstein, '11. Dean Bailey addressed his remarks largely to the Short Course students for whom this was the last Assembly. His remarks as usual abounded with sound advice and striking humor. In closing the Dean urged the students to devote some of their time to good literature, stating how much good many very prominent men got from what they read. He also read selections from some of the best poetry and prose. The usual social hour followed the program.

On Saturday evening, February 18th, the Poultry Club held a banquet that was a fitting climax to the close of the Winter Poultry Course.

The banquet was held at the poultry laboratory, room 119, and the place was so tastefully decorated that it was hard to believe it the same old attic room.

Dean Bailey and Prof. Rice were the speakers of the evening, and commended the club on the good record made during the term. Pres. J. S. Wright acted as toastmaster.

Stunts by J. E. Dougherty, '11, G. J. Mason and G. F. Poggi were given between the addresses and were highly enjoyed by the fifty persons present.

The Poultry Club carried off the basketball honors,—incidentally the cup—winning the final game with the Stone Agr. Club by the close score of 15 to 14.

Mrs. B. H. Tompers, of the Poultry Club, won the public speaking contest for Short Course students, held in the auditorium, Monday, February 20.

Professor C. A. Rogers of the Department of Poultry Husbandry has been attending Farmers' Week conventions in New England. During February he spoke at the Maine Agricultural College and at the Vermont State Agricultural College at Burlington.

On February 17, Mr. George Frederick Wheeler of the International Harvester Company gave a very interesting illustrated lecture on "The Romance of the Reaper."

On the 23d of last month a special organ recital was given by Organist E. F. Johnston in Sage Chapel for the Farmers' Week visitors. The chapel was packed with an appreciative audience.

On January 23d, Mr. Tenney, who was formerly connected with the Department of Agriculture, gave a very interesting talk in the Audi-
torium on, "Some Successes and Failures in Coöperation Among Fruit Growers."

* * *

"Coöperation Both Feasible and Possible," was the subject discussed at the last regular meeting of the Poultry Association held February 17th. The subject proved to be quite popular, nearly everyone taking part in the discussion. Many good points were also brought out in regard to starting coöperative societies in rural districts. In a vote taken at the close the majority were found to be in favor of the plan.

* * *

Another Farmers' Week was held at Alfred University from Feb. 27—March 4, by the New York State School of Agriculture. Professors H. H. Wing and M. W. Harper of the Animal Husbandry Department; G. W. Cavanaugh of the Agricultural Chemistry Department, and J. E. Rice of the Poultry Department were lecturers at that event.

* * *

On March 1st, Prof. Rice spoke before the Portland Farmers' Club of Portland, Me. and spent the remainder of the week at Amherst where he gave several lectures at the Amherst Agricultural College.

* * *

Prof. and Mrs. H. W. Riley are the proud parents of a son which arrived at their home on Wednesday, March 1st

* * *

Present enrollment in the College of Agriculture is: Graduates, 76; regular, 593; special, 174; winter-course, 477; total, 1,320.

* * *

An informal dance was given in the Sage Gymnasium on February 18, by the freshmen of the Agricultural college. The affair was a great success.

* * *

At last the location of the new buildings of the Agricultural college has been announced. It has been decided to establish a new quadrangle of which the three existing Agricultural buildings will form the south side. At the western end of the quadrangle the new Auditorium will be placed. This will be located at the west side of Garden Avenue, to the rear of Rockefeller Hall.

On the northern side will be a space for a few buildings, of which the western will be the Home Economics Building. The rest of this space will be filled up as the growth of the college demands.

The building for the Poultry Husbandry Department is not on the quadrangle but east of it toward the new barns. State Architect Ware is at present arranging for the preparation of the detail plans and specifications. As soon as these are completed, bids will be called for.

* * *

The agricultural intercollege crew has started training for the races in May. A large number of candidates reported at the first call and the outlook for a successful season is very bright. The crew will probably get on the water early in March.

* * *

On February 3d, Prof. Fippin spoke before the National Association of Lime Manufacturers at Pittsburg. His topic was "The Importance of Texture and the Magnesium Content of Lime in Relation to Soil Improvement."

* * *

Messrs. Jensen, Blodgett, and Wallace, Fellows in the Department of Plant Pathology, recently spent a week in bibliographic work in the library of the U. S. Department of Agriculture, at Washington, D. C.

* * *

A Managers' Course in Dairy Industry was given by the Dairy Department, March 1 to 8. This course was primarily for men who were actively engaged in the dairy business and who desired to acquaint themselves with recent advances in the work.

* * *

M. E. defeated Agriculture in a closely contested game of basketball February 23 with a score of 16 to 15. This leaves the standings of the col-
leges as follows: Law, first; M. E., second; C. E., third; and Agriculture, fourth.

At the meeting of the Round Up Club, Monday evening, February 27th, J. H. Neethling, '11, gave a most interesting talk on "Animal Industry in South Africa." Mr. Neethling is a government student from South Africa. Having spent his life in South Africa and knowing so well its conditions and its possibilities Mr. Neethling was able to give a most entertaining as well as instructive talk. Several lantern slides of South African scenes were shown.

Professor Walter Mulford recently delivered two lectures on Forestry. In the first lecture on February 13th, Prof. Mulford discussed the opportunities for young men in Forestry and explained what were the fundamental requirements for this work. On February 14th he delivered a very interesting illustrated lecture on "A Day's Work of One of Uncle Sam's Foresters."

At the meeting of the Round Up Club on February 13th, A. L. Thompson, '11, gave a talk on "The Percheron Horse."

Prof. Mulford has returned to Ann Arbor, Mich., where he will remain until April, when he hopes to again visit Ithaca for a few days.

An agricultural exhibit is being prepared by the College as part of a University exhibit to be sent to the International Exposition held at Turin, Italy, during the coming summer.

During his recent trip to the Corn Congress in Ohio, Dean Bailey spoke before Sigma Xi of the University of Ohio.

The planting of the new orchard on the Pomological grounds will be continued this spring. The Department has leased the old McGowen Orchard which will be used as a laboratory for student practice.

A meeting of international importance was held at Tampa by the American Pomological Society, which is the national fruit grower's association of the United States and Canada. Delegates from twenty-six horticultural organizations representing twenty-five states were present. Prof. Craig was reelected secretary, and authorized to edit a pomological history, which it is expected the society will publish in the near future.

On the 7th of February, Prof. Craig addressed the Georgia Horticultural Society at Thomasville, Ga., on "Recent Progress in Horticulture."

On Thursday evening of Farmers' Week a re-union of the Stone Club was held, at which many members who had studied under Prof. Stone in 1908, and the following winters were present. Professor Stone was enthusiastically received and explained the present plans of the college. Different members told of their past successes and plans for the future.

Prof. Tuck explained the object of the Students' Association. It was brought out that in many cases there are many Agricultural students living in the same county, who are unacquainted with one another. He outlined the plan of forming county branches of the Student's Association, similar to the Long Island branch, in order to bring former students together for social reasons and that they may be more instrumental in improving local conditions, as outlined by Dean Bailey and indorsed by the general meeting of the Students' Association. All present were much interested in the plan and agreed that each should do what he can in furthering the movement.

A new circular on "The Box Packing of Apples" by Prof. C. S. Wilson is now ready for distribution. It contains the substance of his lecture on the subject delivered Farmers' Week,
and describes in detail a practical home-made press for nailing apple boxes. The best apples for box packing are: MacIntosh, Fameuse, Northern Spy, King, Hubbardston, and sometimes the Baldwin and the Rome Beauty.

Mr. Lipman has resigned his position as Assistant in Soil Technology, having completed his college course. A. K. Getman will occupy this position for this term.

Prof. John Michels, formerly Professor in Cheese Making, has accepted a position in Milwaukee as editor of The Butter, Cheese, and Egg Journal.

E. Wallace and E. W. Mitchell of the Department of Plant Pathology, read papers at the eastern meeting of the New York Fruit Growers Association held at Poughkeepsie, Feb. 23 and 24.

Commissioner of Agriculture, R. A. Pearson delivered a special lecture before the Short Course students, February 21, on “The Dairy Laws of New York State.”

FORMER STUDENTS

'03, Sp.—Henry J. Lyman is managing a stock farm at Kapoho, Hawaii.

'08, M. S. A.—J. Edgar Higgins of the United States Experiment station at Honolulu has been for some time past in Hawaii, the largest island of the group, looking over the banana situation.

'01, B. S. A.—D. L. Van Dine is now entomologist at the experiment station of the Association of Sugar Producers of Porto Rico, at Rio Piedras, Porto Rico.

'05, W. C. Poultry.—Mr. Gus. Walters is now managing a 3000 acre poultry farm at Marion, N. D.

'06, B. S. A.—Jacob Taubenhaus of the Delaware Agricultural Experiment Station read a paper on “A Study of Some Anthracnoses and Their Relation to a Sweet Pea Disease” at the Minneapolis meeting of the American Association for the Advancement of Science.

'06, B. S. A.—Edward Mansfield Swiggett is now Superintendent of Parks in Utica, N. Y., with an office at 41 Martin Building.

'07, B. S. A.—Mr. M. J. Shepard is now at San Marcos, Texas where he has for the last year been developing sewerage irrigated lands. He is quite enthusiastic concerning conditions in that section.

'07, W. P.—E. Thurman Covington of Centreville, Md., aged 22, died at his home, February 2, 1911, after a lingering illness of two years.

'08, Sp.—Miss Mary Conway and Tryjgoe E. Schreiner were married January 27, 1911 in Ithaca, N. Y. Mr. Schreiner is now superintendent of the Poultry Department at the Kansas State Agricultural College. Mr. and Mrs. Schreiner will make their home at Manhattan, Kansas.

'08, B. S. A.; '09, M. S. A.—E. C. Ewing is with the Mississippi Agricultural Experiment Station.

'08, W. A.—R. C. Baynard who was married in December, ’09, took possession of his farm at Carmichael, Md., in January, 1910. He is gradually developing a good dairy along with considerable general farming.

'08, W. A.—J. L. Wells is making a specialty of dairying and hog raising on his farm at Spring City, Pa.

'08, W. A.—M. V. Wilkinson is at present taking a special course here.

'08, W. A.—On February 1, 1911 Mr. D. B. Knight assumed the duties of farm superintendent at the Berkshire Industrial School, Caanan, N. Y.

'09, B. S. A.—Edward H. Thomson is a scientific assistant in the Office of Farm Management of the United
States Department of Agriculture, Washington, D. C.

'09, B. S. A.—C. M. Bennett is representing the Government in cooperative work in Farm Economics at the University of Wisconsin. During Farmers' Week he was in Ithaca while on his way to attend a convention at Washington.

'09, Sp.—F. D. Palmer is engaged in official testing work throughout the State under the direction of Prof. Wing.

'10, B. S. A.—P. H. Elwood, jr., is with Charles W. Leavitt, jr., landscape engineer, at 220 Broadway, New York. His personal address is 66 Quincy street, Brooklyn.

'10, B. S. A.—Miss Elizabeth Leonard left this country for England in December to accept a position as landscape architect.

'10, Ph. D.—Dr. Eugene P. Hum- bert, who received his Ph.D. degree from Cornell last June, and who last fall accepted a position in the Department of Agriculture at Washington, D. C., has resigned his position at Washington to go to the University of Maine to work with Dr. Raymond Pearl on experimental studies in genetics.

'10, W. P.—Frank E. Mixa has been awarded a five acre farm in Missouri which he won in a contest in which over two hundred persons, from nineteen different states, competed. The farm, given as first prize, is located near a thriving village and is estimated to be worth $250 to $300. The deed to the farm will be delivered to him by the Governor of the state.

Mr. Mixa is now assistant in Poultry Husbandry at the Iowa State Agricultural College.

'10, W. P.—Fred G. Quern secured seventh place in the same contest and received a $5.00 prize.

'10, W. H.—Mr. Geo. Sprague has been located at Turner Hill Farm, Ipswich, Mass. where he is foreman of its fruit department.

'10, W. H.—Mr. W. P. Harris secured high honors at a late meeting of the Maryland Horticultural Society. Mr. Harris exhibited some excellent boxed apples.

'10, W. H.—Mr. Hamilton has purchased a ten acre farm near Gasport, N. Y. where he will specialize in berries.

'10, W. H.—Mr. V. H. Tift has been with Mr. Ira Pease the past season.

BOOK REVIEWS

RURAL HYGIENE, by Henry N. Ogden, C.E.

This work by the Professor of Sanitary Engineering in the College of Civil Engineering, Cornell University, is of value to all who are interested in country life. The author discusses the location and construction of farm buildings; ventilation; water supply; sewage disposal; the care of foods; personal hygiene; and diseases. The book takes up from the standpoint of an engineer the structural side of public hygiene and attaches emphasis to quarantine, disinfection, and prevention of contagious diseases. The general reader, the farmer, or the student of sanitary science will find this book a fund of practical suggestions and useful information. Published by Macmillan & Company, New York; 434 pages, 79 illustrations; price $1.50 net, postage 20 cents additional.
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Progressive farmers find that the Eddy Reversible Sulky Plow saves time and labor, and does better work than ordinary plows.

Write to-day for Catalog of Eddy Plows

W. EDDY PLOW CO.

GREENWICH, N. Y.
You can cover two acres in the same time it takes the other fellow to cover one, and do it with less work for the team and with less help if you use a

FEARLESS MANURE SPREADER

That's because the Fearless spreads a strip of manure 8 ¼ feet wide, or way beyond the sides of its 4-foot box. No other spreader can do this, because no other spreader has the Circular Beater—an exclusive Fearless feature.

No other spreader can spread manure evenly—thick or thin—as thick on the edges as in the center. The manure can be thrown where other machines can't cover—right up to fruit rows, trees and fences, and, because of the special front truck, into remote corners of the field.

SEND FOR OUR CATALOG

and learn all about these exclusive features of the Fearless that mean such a big saving for you in time, money and labor. Send for it now or you'll forget it and be the loser.

Walter A. Wood
M. & R. M. Co.
Box 501
Hoosick Falls
New York
Not connected with any Trust or Combination
A Wise Selection--No Paint for these Roofs

When RELIANCE RUBBER ROOFING, "The Roof Durable", is selected for work of such magnitude and importance as the new plant of the Independent Steel Companies, Kenova, W. Va. (shown in cut below), it is very significant.

In competition with very nearly every other roofing known, and after being subjected to the most exacting tests and searching investigation, RELIANCE was unanimously agreed upon as the choice for this great work 180,000 square feet of roof surface being covered with three ply RELIANCE!

The owners of this great plant are now assured of something they would not be sure of if they used some other roofing. They know they now have a roof which will not cost them one penny additional above the original cost, at least for the next ten years, for RELIANCE is flatly guaranteed to wear that long without the usual painting or coating. And RELIANCE is the only roofing made that is guaranteed in this fair and liberal manner.

RELIANCE RUBBER ROOFING
"The Roof Durable"

The selection of RELIANCE by such critical business men as are back of an enterprise like this big Kenova plant offers a splendid guide for you. If you are anxious to get roofing you can absolutely rely on every day of the year and one which will entirely relieve you of all future annoyance and expense we urge you to investigate carefully the records and facts about RELIANCE RUBBER ROOFING, "The Roof Durable".

This roofing is put up in rolls all ready to lay, including Liquid Lap Cement, Broadheaded Nails and Illustrated Directions for Laying. Anyone can lay it successfully.

It will please us to send you samples with which to make your own tests and also we will place in your hands a copy of the interesting Booklet "Guaranteed Roofing" which throws a whole lot of light on the roofing question and which will give you some valuable pointers.

Drop us a postal. You will find us promptly and cheerfully at your service.

B. & S. LUMBER COMPANY, Fort Plain, N. Y.
SOLE DISTRIBUTING AGENTS

New Plant Independent Steel Companies, Kenova, W. Va., protected by 180,000 square feet three ply RELIANCE RUBBER ROOFING.

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SEEDS...

Alfalfa, Clover
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“Student Supplies”
for rooms
Decorations and Necessaries
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The Charming Kinderhook Country
WANTS YOU

What, to buy a farm? Oh no, just to see what a lovely land it is. Then perhaps
you cannot help settling there. The Kinderhook is one of the most attractive
spots in the whole Hudson Valley and at the same time one of the best orchard
sections in the United States. LET US SHOW YOU.
First, send for booklet.

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It is not too late to write for our catalogue. A reliable list of the most
reliable seeds and all kinds of garden and farm supplies.

Send for one and look it over

MARTIN C. RIBSAM
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In writing to advertisers please mention THE CORNELL COUNTRYMAN
GENUINE THOMAS
PHOSPHATE POWDER
(BASIC SLAG PHOSPHATE)

GROWS BIG RED APPLES AND OTHER FRUITS

Why let the fruits of Oregon and California monopolize our best markets when fruit of EQUALLY FINE APPEARANCE AND FAR BETTER QUALITY can be RAISED RIGHT HERE if you FEED YOUR TREES AND FEED THEM PROPERLY?

During the past five years GENUINE THOMAS PHOSPHATE POWDER has proven its value. Used by the leading fruit growers it has given high color, superior quality, healthy foliage and increased yields. It has proven its positive action in encouraging and developing fruit buds. It has, in short, produced fruit that ships better, looks better, tastes better and pays better than fruit raised otherwise.

Mr. George A. Drew, of Connecticut, well known as a standard authority on fruit growing, writes us as follows:

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GENTLEMEN—I have used THOMAS PHOSPHATE POWDER (Basic Slag Phosphate) for four years past for the fertilization of fruits, more especially on apples and peaches.

I have been reluctant to express an opinion on the merits of this material until I have used it long enough to be sure of its effects.

I find that it has a very positive action in encouraging and improving the fruit buds, and an equally positive action in producing high color and excellent quality in both apples and peaches.

The splendid crops of clover which we grow in our orchards we could not grow before we used Thomas Phosphate Powder, and we attribute these excellent crops of clover (which are valuable in furnishing nitrogen to the fruit), to the use of Thomas Phosphate Powder. The only material that we use in conjunction with Thomas Phosphate Powder is High Grade Sulphate of Potash.

(Signed) GEORGE A. DREW, CONN.

(At the great Fruit Show held at Boston, Mass., October 18 to 24, 1909, fruit grown on Thomas Phosphate Powder by Mr. Drew, took nine First Premiums, two Second Premiums, and four Third Premiums, including a Silver Cup and a Silver medal).

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(BASIC SLAG PHOSPHATE)

Is an Alkaline Phosphate of High Availability. The Average of Nine Analyses at the Massachusetts Experiment Station shows the following:

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THOMAS PHOSPHATE POWDER ALSO CONTAINS 35 to 50 per cent of EFFECTIVE LIME, 15 to 17 per cent. of IRON and 3 to 6 per cent of MANGANESE.

All buyers should insist on having GENUINE THOMAS PHOSPHATE POWDER (BASIC SLAG PHOSPHATE) BEARING ON THE TAGS.

THE “KEY AND TREE” TRADE MARK.

By buying THOMAS PHOSPHATE POWDER bearing this Trade Mark you can be sure to get the Genuine Unadulterated Article.

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THE COE-MORTIMER COMPANY,
SPECIAL IMPORTERS
Manufacturers of E. Frank Coe Fertilizers and Peruvian Brands.
(The Highest Grade Mixed Fertilizers on the Market.)

24-26 Stone Street,
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(We distribute from New York, Boston, Mass., Baltimore, Md., Norfolk, Va., Wilmington, N. C., Savannah, Ga., and Charleston, S. C.)
Reserved for

Allen L. Wood

Woodlawn Nurseries

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A SUBSTITUTE
For Bordeaux Mixture
10 gal. keg making 2,000 to 5,000 gal. spray, delivered at any E. K. station in the United States for $12.50. Prompt shipments. Every grower of fruits and vegetables should have our report of wonderful results 1910.

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Buffalo Wagon Scales
Saves 10 Times Their Cost
By Giving You Absolutely Accurate Weight

Dependable Scales built to last and sold direct to the user.
Full information for the asking.

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ESTABLISHED 1859
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New York State College of Agriculture at Cornell University, the
DEPARTMENT OF ANIMAL HUSBANDRY
will dispose of its surplus live stock at PUBLIC SALE
FRIDAY, FEBRUARY 24, 1911
during FARMERS' WEEK

The offering will consist of: HOLSTEIN, JERSEY and GUERNSEY bull calves from advanced registry dams and CHESHIRE pigs, boars, young bred sows and sow pigs from prize winning stock. Catalogues ready February 1, 1911. Address

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Have Your Laundry Done at
THE STUDENT LAUNDRY AGENCY
422 EDDY ST. PHONES—BELL 676, ITHACA 630
Run by Students all the Year Round

Lessen Your Labor
by using the
self-operating—up-to-date
ASPINWALL
Potato Planter No. 3

Work accurate. Adjustment simple. Mechanical principles right. Durability—many in use from 10 to 20 years without a cent expended for repairs.

One person operates it.

Protect your crop with ASPINWALL SPRAYER.
Orchard and Broadcast attachments furnished when desired, also attachment for Tomato and Cucumber Spraying. Write for catalog, also our new booklet, "The Potato." It contains information every farmer should have.

Aspinwall Manufacturing Co.
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World's oldest and largest makers of Potato Machinery

The Cornell University Brooder Gasoline Heater
IS MADE BY
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New York State Sewer Pipe Company

Cement, Clay, and Gypsum Products
in carload and less carload lots

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Best Portland Cements
Vitrified and Salt Glazed Sewer Pipe
Fire Clay Flue Linings
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Vitrified Clay Building Blocks and Hollow Tile
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Drain Tile-Hexagon

We particularly desire to call attention to our excellent FARM DRAIN TILE and solicit inquiries for prices and samples.

Samples will be sent free with each inquiry if desired and we prefer that each new customer receive our sample before placing an order.

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THE LEADING AMERICAN SEED CATALOG FOR 1911.

"THE SILENT SALESMAN" of the World's Largest Mail-Order Seed Trade tells the plain truth about the Best Seeds that can be grown—as proved at our famous Fordhook Farms, the largest Trial Grounds in America. Handsomely bound with covers lithographed in nine colors it shows, with the six colored plates, Seventeen Choicest Vegetables and most Beautiful New Flowers.

It is a Safe Guide to success in the garden and should be consulted by everyone who plant seeds. It is mailed FREE to all who appreciate Quality in Seeds. Shall we mail You a copy? If so, kindly name this magazine and write TO-DAY!

W. ATLEE BURPEE & CO.
BURPEE BUILDINGS PHILADELPHIA

That True "June" Shade

in Butter Is Obtained by Using

Chr. Hansen's Danish Butter Color
The COLOR of QUALITY

Mr. G. P. Sauer, President Wisconsin Buttermakers' Association, writes as follows:

"Have been using Hansen's Butter Color for two years. Find it is the BEST ON THE MARKET. It leaves no bad flavor in the butter, and gives that nice "June" shade. It keeps its good quality for a long time. Used some six months old for the State Fair butter."

Chr. Hansen’s Danish Dairy Preparations Are the STANDARD of the WORLD
RENNET EXTRACT, CHEESE COLOR, LACTIC FERMENT CULTURE
RENNET TABLETS and CHEESE COLOR TABLETS

HANSEN'S means QUALITY
CHR. HANSEN’S LABORATORY
Box 1095, LITTLE FALLS, N. Y.

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JACOBSON
Self-Contained Engine
Powerful
Durable
Economical


JACOBSON MACHINE MFG. CO.
Write for Bulletin 32. WARREN, PA.

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Fresh, Salt and Smoked Meats
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D. S. O'BRIEN

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The car whose engine is destined to revolutionize the industry.

The **HIGH DUTY ENGINE** used in all **ELMORE** models for 1911, is the most simple and powerful gas engine in the world. It fulfills the prophecy of eminent engineers in its signal two-cycle perfection.

Send for catalogue.
Desirable representation wanted in unclosed territory.

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100 desirable properties, near cities, villages, railroads, creameries and good schools. Large farms. Small farms.
From $10.00 an acre to any price you may want to pay.
Location and conditions make the price.

**New York State** farms at one-half the price of Western farms; will pay 100 per cent. better. Good roads, rural delivery of mail, telephones, all advantages of the city all parts of the state.
A guarantee bond, warranty deed, full abstract of title with every deed.

I can sell your property.  Send for catalogue of farms.

**H. L. REED**
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SPRAY THOROUGHLY

Thorough spraying is a crop insurance of the strongest kind, but you cannot spray thoroughly unless you use

GOULDS RELIABLE SPRAYERS

They are better known, more widely used, and in greater demand than any other line—because, correct design, perfect material and expert workmanship—backed by more than 62 years of exclusive Pump making experience—are represented in each Sprayer we sell.

Every Fruit Grower should send for our booklet—

"How to Spray—When to Spray—What Sprayers to Use"

It goes into the subject of sprayers and spraying mixtures very thoroughly. We'll be glad to mail it to you upon request.

THE GOULDS MFG. CO.
16 W. Fall St., Seneca Falls, N.Y.
We make all kinds of hand and power pumps for farm work.

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Producers of RAW GROUND LIME ROCK

Will not destroy the Humus in the soil.

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Jerome B. Rice Seed Co.
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SOLD BY MERCHANTS AND DEALERS EVERYWHERE

Men who Live in the Open Appreciate the Best in Nature.

Men who Wear the Quality Shop Clothes Appreciate the Best in Tailoring.

E. B. BAXTER,
150 East State St., Ithaca, N. Y.

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Check here My first Season's Experience with the Honey-Bee. By "The Spectator" of the Outlook, New York. A ten-page leaflet detailing the experience of this well-known writer. You will read the leaflet through before you lay it down. Free.

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Beech-Nut Peanut Butter is simply great for sandwiches.

YOUR GROCER SELLS IT

BEECH-NUT PKG. CO.
Canajoharie, N. Y.

It's Bully!

Aphine Manufacturing Co.
MADISON, N. J.

The Insecticide that kills plant lice of every species.

You can depend upon it for positive results without fear of failure or dissatisfaction.

It destroys green, black, white fly, red spider, thrip, mealy bug, white and brown scale.

$2.50 PER GALLON
$1.00 PER QUART

Get it from your seedsmen

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The Cornell Countryman

BUG DEATH

is free from arsenic. It destroys potato bugs, currant worms, and insects that chew the leaves of vegetables and fruit trees.

BUG DEATH is applied dry or in solution. Its best recommendation is the fact it has been used year after year for 14 years by practical pains-taking people on various kinds of plants and trees. Manufactured by

DANFORTH CHEMICAL CO. LEOMINSTER, MASS.

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PAT. MAR. 16 & NOV. 9, 1897

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BEST GRADE MADE

Coles & Company
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We offer High Grade Holsteins milking from 50 to 70 lbs. each daily and guaranteed to make 10,000 lbs. milk each in a year. Not "hot air" but proven facts. "The recollection of quality remains long after the price is forgotten." Address

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Every good thing should have a chance. Give the good things advertised in the Countryman a chance. They won't need another.
Williams Brothers
ITHACA, NEW YORK

WELL DRILLING
MACHINERY AND
TOOLS

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RIVER MEADOW FARMS
McLAURY BROS., Proprietors
PORTLANDVILLE, N. Y.

Do not forget the advertisers in the Countryman when doing your Spring buying.

Every good thing should have a chance. Give the good things advertised in the Countryman a chance. They wont need another.
Fruit Sprayed with Bowker's "Pyrox"

brings more money because it is free from injury by worms, scab, etc. Over 300 testimonials in our new catalogue show the great value of this preparation on all kinds of fruits and vegetables. Pyrox serves two purposes; it kills insects and prevents disease and blemish. It adheres to the foliage even through heavy rains, saving labor and cost of re-spraying. Perfectly safe. It is all ready to use by mixing with cold water. Every grower who seeks fruit and vegetables free from blemish needs "Pyrox," the "one best spray." It "Fills the barrel with the kind they used to put on Top"

Send for new catalogue with photograph of sprayed and unsprayed fruit in original colors. Will convince the most skeptical. Say how many and what kind of fruit trees, or how many acres of potatoes you have to spray, and ask for special prices. We ship from Boston, Baltimore and Cincinnati.

BOWKER INSECTICIDE COMPANY,
43 CHATHAM ST., BOSTON, MASS.

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<tr>
<th>WIZARD BRAND MANURES.</th>
<th>F. O. B. Chicago, Ill.</th>
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<td><strong>In Bags</strong></td>
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<td><strong>Sheep</strong></td>
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F. O. B. Buffalo, add 22c per Hd. lbs. freight. Always carried in stock.

Pure Bone Meal, 167 lb. bags, $2.00 per 100 lbs. $35.00 per ton.

INSECTICIDES—We Handle All Kinds

Nico-fume, Nicoticide, Tobakine, Tobacco Dust, Grape Dust, Slug Shot, Rose Leaf Extract, Lemon Oil, Arsenate of Lead, Aphine and Wilsons Plant Oil at regular market prices. Sprayers, $3.00 to $6.00 each

WM. F. KASTING CO., Buffalo, N. Y.

COW STANCHIONS AND STALLS

Quick to open
Quick to close
Quick to please
Quick Shipments

Stanchions adapted to either wood or steel frames

STRONG SANITARY

BOWEN & QUICK, Mfgrs.
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In writing to advertisers please mention THE CORNELL COUNTRYMAN
The Kind of Greenhouse We Build

How under heavens can we tell you in this short space? Simply out of the question! What you can do, however, is go down and look at those last houses we put up for the college. Then you will see our Sectional Iron Frame and Pipe Frame Houses, which are our best types of construction. Incidentally you might ask Prof. Judson his opinion of Lord & Burnham constructions. Glad to send you information or catalogues.

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CHICAGO
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Selling Baggage and telling tales are very similar. Somebody can always go you one better.

Every retailer is just pop-gun certain sure that nobody on earth has better merchandise than he. But mighty few will like to have you match some other fellow's goods with theirs. Comparisons are, often, odious.

Now I am so sure of my traveling goods that I want you to see others along side of mine. You'll buy mine.

The baggage you want; at the price you want to pay.

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MIDDLE AND UPPER PORTAGE FALLS, GENESEE RIVER.
CONSERVATION OF WATER RESOURCES IN NEW YORK STATE

By David R. Cooper
Engineer-Secretary to the New York State Water Supply Commission

THE people of the State of New York have a deep natural interest in the important economic problems recently brought so forcibly to the attention of the American people through the agency of what has appropriately been termed "the conservation movement." That interest is properly manifested because, in all probability, no State in the Union is invested with conditions so favorable and opportunities so promising for the early accomplishment of material progress in the practical conservation of one of the most valuable natural resources.

WATER AS A NATURAL RESOURCE IN NEW YORK STATE

In New York State the surface water supply as a natural resource is second in value only to the land itself, which indeed owes its value largely to the existence of such an abundant natural water supply.

The value of water varies considerably, according to the use to which it is applied. It must be conceded that its value for potable and domestic purposes cannot be estimated in dollars and cents, constituting as it does a necessity of life for which no substitute exists. Its money value in such cases is represented by whatever it costs to obtain the supply, be that much or little. But aside from any such consideration as this, water is practically the only natural resource within the State of New York for the development of power, that great and fundamental requisite to the prosperity and comfort of a civilized community. The State does not have a coal supply of its own, not even enough to operate its existing iron mines, to say nothing of mining the whole of the valuable deposit, estimated at three hundred million tons.

This condition is compensated for in a large measure if not altogether, by the fact that, in addition to the existence of an abundant water supply, the profiles of the streams and the general topography of a large portion of the State are naturally favorable for the establishment of hydraulic power developments, and the construction of storage reservoirs for the regulation of the flow of the streams. These reservoirs are an essential feature of the plan for conserving the waters of New York State streams.

The State has taken a notable forward step in the conservation field, by assuming certain regulative powers over the disposition of these resources and by the institution of a systematic inventory of them to determine the extent, not only of the supply, but of existing developments and present uses, and the possibilities for additional uses and new developments. It has also made extensive studies to determine the possibilities for water storage reservoirs.
DEVELOPMENT OF WATER CONSERVATION AS A STATE POLICY

In 1902, a special act of the Legislature created the Water Storage Commission which was directed to make surveys and investigations to determine the causes of the overflow of the various river and water courses of the State, and to determine what, if anything, could be done to prevent such overflow. That Commission after about a year's investigation and research, with a remarkably small appropriation at their disposal, submitted to the Legislature an extremely valuable and comprehensive report on the flood conditions of the principal streams of the State. The report pointed out that storage reservoirs constituted the only practicable solution of the problem in the majority of instances, and recommended the construction of several such reservoirs at points where conditions were known to be favorable. Having submitted its report to the Legislature, the Water Storage Commission automatically ceased to exist.

The next step in the development of the water storage movement was the creation of the River Improvement Commission by act of the Legislature in 1904. That Commission was clothed with power to make preliminary investigations, plans and surveys for the regulation of any stream, the restricted, unrestricted or irregular flow of which should be shown by petition of local residents to be a menace to the public health and safety of the community.

While the River Improvement Commission was still in existence, the State Water Supply Commission was created in 1905; the primary object of its creation being to insure an equitable apportionment of the sources for public water supplies among the various municipalities and civil divisions of the State.

By act of the Legislature of 1906, the River Improvement Commission was discontinued as a separate board and all its powers and duties were transferred to the State Water Supply Commission. This action was in accordance with recommendations made to the Legislature by the members of the River Improvement Commission. The jurisdiction of the Water Supply Commission was subsequently extended to an investigation of water powers within the State, and the preparation of a plan for their general development.

The Commission is, therefore, engaged at the present time in three distinct but closely related lines of work: (1) the apportionment of public water supplies; (2) the improvement of rivers in the interest of public health and safety, and (3) the formulation of a plan for the general development of the water resources of the State. Only the last of these can be intelligently discussed in the space here afforded.

WATER POWER AND WATER STORAGE POSSIBILITIES

The most recent extension of the jurisdiction of the Water Supply Commission, and under which it is investigating the water resources of the State, contemplates three principal lines of operation. These are: (1) to collect information relating to the water powers of the State; (2) to make plans for such specific developments as the Commission deems available, and to make such other investigations and studies as will enable it (3) to devise a comprehensive and practicable plan for the general development of the water powers of the State for the public use and benefit and the increase of the public revenue, under State ownership and control.

In accordance with this statute, the Commission has proceeded to investigate in great detail the conditions governing rainfall and runoff of streams within the State. A detailed investigation was also made by competent engineering employees to determine the number, capacity, equipment and other material information, relating to practically every developed water power in the State. A general investigation of topographic conditions has also been made and practically all
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NATURAL FLUCTUATIONS OF FLOW
OF
NEW YORK STATE STREAMS.
promising storage opportunities have been located and their approximate possibilities determined. A number of great reservoir projects have been surveyed and mapped in great detail.

The first important fact that impresses itself upon the investigator is that in spite of the great natural advantages which New York State possesses in its interior streams with their enormous possibilities for power, developed and undeveloped, the fullest utilization of these possibilities can never be realized under existing conditions. Every river in the State exhibits such irregularity of flow in its natural state that the water power which may be economically developed from the present minimum flow is far below the average which can be attained by means of scientific regulation. The difference between maximum and minimum flow of most of our streams when stated in figures is startling to the layman. The Hudson river, which is more or less typical of the streams of the State, has a maximum recorded daily discharge one hundred times as great as its least daily flow. The Genesee river, which is much more flashy, has a maximum daily discharge about four hundred times the minimum daily flow. On the other hand, the Oswego river, which is naturally more or less regulated by the storage in the "Finger Lakes," has a maximum discharge about twenty times as great as the minimum. The yearly discharge of some of the rivers in a wet year when stated in figures is nearly double the yearly flow of a dry year. On a great many streams as much as three-fourths of the volume of yearly flow usually runs off during a period of a few months in the spring and early summer.

These remarkable natural fluctuations of stream flow are principally attributed to the uneven distribution of precipitation through the year and the varying evaporation, which is generally greatest in the months of least precipitation. Over a large portion of the State, the greater part of the annual precipitation occurs in the winter and spring months. Considerable water is temporarily stored in the snow banks and is usually reduced to the equivalent of rain simultaneously with the customary heavy rainfall of the early spring months. It is quite a common occurrence for millions of cubic feet of water to be running over the falls and dams in the streams during these spring freshet periods, which if it could be stored until the drier summer and fall months, would be of wonderful utility in not only maintaining a higher rate of flow in those dry months, but also doing away largely with the damage and inconvenience incident to the sudden runoff of flood waters in their natural condition. These conditions point almost universally to the necessity for large water storage reservoirs as the only practicable means of accomplishing any considerable degree of regulation.

The investigations of the Water Supply Commission have shown that there is an installation of water wheels having a capacity of about 830,000 horsepower within the State of New York, of which amount about 200,000 horsepower is at Niagara Falls. The average daily output of these plants is about 620,000 horsepower of which 145,000 horsepower is produced at Niagara Falls. There are in all more than 1800 hydraulic power plants within the State, many of which are equipped with steam auxiliary power plants of considerable capacity. The total capacity of these auxiliary plants is about 124,000 horsepower. In most instances the use of this large auxiliary power equipment is not sufficient to enable the plants to be operated on full time during the dry months of the year.

The investigations to determine power possibilities have indicated a total development of about 1,500,000 horsepower to be economically feasible within the State. This amount of power would be uninterrupted continuous power and exclusive of the Niagara river, where the development of power is limited by federal statute, and the portion of the St. Lawrence river not under the jurisdiction of the State of New York. A considerable
part of this amount is represented by that which would be added to the existing developments by the regulation of the flow of the streams.

A number of individual opportunities exist for large new developments, some of the most important of which are: 30,000 horsepower on the Genesee river at Portage Falls, 30,000 horsepower on the Sacandaga river at Conklingville, 32,000 horsepower on the Raquette river at Colton Falls. There are many other possibilities for developments ranging from 1,000 to 20,000 horsepower.

Among the most promising opportunities for the inauguration of a State policy in storage reservoir construction is that offered by the conditions on the Genesee river. The Commission's investigations have shown that it is practicable to build a dam near Portage, N. Y., which would create a reservoir about fifteen miles long and over a mile wide, with a total capacity of about eighteen billion cubic feet. The cost would be about $4,500,000. The regulation of the stream by this reservoir would not only practically do away with disastrous floods in the Genesee valley, but would add power worth at the very least $200,000 a year to the existing power developments on the lower reaches of the river at Rochester. A new power development amounting to at least 30,000 horsepower would be possible in connection with the dam. The value of water power at Mount Morris would also be greatly enhanced and the nuisance created by the present polluted condition of the river below Rochester would be done away with.

On the Sacandaga river a reservoir about twenty miles long and over forty square miles in area is proposed. This basin has a capacity of about thirty billion cubic feet. There is the possibility of a 30,000 horsepower development in connection with the dam. At the same time the release of stored water would result in raising the present minimum power of the Hudson river in the principal power district by about 80,000 horsepower.

The other tributaries to the Hudson are proposed to be regulated by one reservoir of about sixteen billion cubic feet on the Schroon river and one of twelve billion cubic feet on the Indian and Cedar rivers.

On the Raquette river are possibilities for storage sufficient to equalize the flow completely. This requires about twenty-one billion cubic feet of reservoir capacity. On the Black river a system of several reservoirs is proposed, totaling about thirteen billion cubic feet capacity. Many other smaller projects are under consideration but present conditions of power demand are not so favorable as in the above mentioned instances. It is estimated that $20,000,000,000 would be sufficient to build all the reservoirs whose construction is justified under present conditions.

NEED FOR COMPREHENSIVE PLAN AND DEFINITE POLICY

In view of the promising possibilities and the large values involved, the importance of a fixed policy establishing State leadership and control in the matter of water conservation cannot be overestimated. Without it, there is no place for consecutive and correlated action, either executive or legislative. In the past the State has had no policy of power development, either under public ownership or by encouragement and regulation of private or corporate development. Unlike many other states, New York has never, under general laws, granted the right of eminent domain to individuals or corporations for the purpose of flooding lands to create storage reservoirs and developing water power. Moreover, it must be conceded that in view of the doubtful constitutionality of the "mill acts" of other states, and particularly in view of the strength of the modern sentiment demanding universal sharing in the benefits of natural resources, this State is not likely in the future indiscriminately to grant its power of eminent domain for this purpose. Unless the State shall
define its policy and enter upon the work of carrying it out, this feature of its natural resources must largely remain in its present undeveloped condition, or be subject to the same haphazard and uncontrolled methods of utilization that have governed in the past. If we are to permit private interests to build storage reservoirs for power purposes on any broad and satisfactory plan it can only be done by amending the Constitution. As adequate reservoirs cannot be generally constructed for power purposes by private enterprise without constitutional amendment, and possibly not then, it seems that the better way to accomplish this object is for the State itself to announce its policy and undertake its performance in the interest of the people at large.

Development by the State would insure the fullest possible utilization of the power possibilities of each stream, whereas development by uncontrolled private enterprise often involves waste of resources. Private capital, seeking the greatest possible immediate return on the investment, naturally confines its attention to the most concentrated portion of a given fall. The less precipitous portions of the fall above and below, involving a large unit outlay in development, are consequently apt to be neglected, and in too many cases permanently wasted, because no other enterprise is likely to undertake their development afterward, even if the rights of the company already on the spot would permit this to be done.

On the other hand, the State, with its greater power and scope, and with financial resources enabling it to defer the return on its investment, could undertake the construction of the more extensive works necessary to develop the full extent of the fall in the supposed case. Without amplifying the point, it should be clear that the State is the only authority with sufficient power to ensure the complete development of each and every stream so that every foot-pound of energy represented by its falling waters may be given up when necessary to the service of man.

On the other hand, the prime inclusive reason for the exercise of State authority over the control of stream flow for power development is that, under modern social and economic conditions, this step is necessary to ensure the equal participation by all citizens in this form of natural wealth, which is peculiarly the heritage of the whole people. It appears that from all points of view the State is the proper authority to undertake and carry out the conservation of its own water resources. Legislative consideration of the subject has been slow, and it still remains to be seen whether the State will take advantage of its wonderful opportunities before private interests get the remaining cream and it is too late for the State to act effectively.
THE CHURCH FOR THE WORKING FARMER

By Warren H. Wilson, Ph.D.

EDITOR'S NOTE.—Dr. Wilson is Superintendent of the Department of Church and Country Life of the Board of Home Missions of the Presbyterian Church. He was one of the speakers at the Rural Church Conference held here during Farmers' Week.

THE church is dealing in the country community with a healthy and moral population of American stock. Our recent investigations in Pennsylvania, Indiana, and Illinois have shown that the farming population has high vitality, is free generally from immoral conditions, and is but little affected by the immigration which is filling the cities and the factory towns. The process described by Anderson in "The Country Town" is shown to be very general in the sifting of the country population. The bolder and more enterprising individuals, both good and evil, have gone to the city. The country church, therefore, has to deal with an unprogressive healthy, satisfied, and American population.

The work of the church is profoundly affected by the redistribution of land which is going on all over the United States. Since 1890, as recently shown by Prof. J. B. Ross, the exploitation of land throughout the country has gone very far, especially in the Middle West. Before that time the farmer had permanent notions of country residence. The evidences of this exploiting in land are shown in tenant farmers, absentee landlords, retired farmers, and speculators. Under these conditions entirely new values of land and men have come to prevail in the country community. The earlier values were based on the first use of the soil, the first values of timber and of pasture, the first profits of the market.

Present values are based on final or marginal utility. Their source is not plenty, but bare subsistence. The profit made under the new condition is a profit in the by-products, whereas the earlier profit was a substantial portion of the raw products of the soil, the forest, and the pasture. We are obliged to deal too with marginal values in men. The church in the early days standardized her work upon the leading citizens, upon the brighter and abler, the wealthier and the more successful members of the congregation. The modern church is directing her policies by the needs of the poor. The country church today has learned that her survival is dependent on the tenant farmer and farm hand, upon the young people of the community and the boys and girls in the farm household. If the church can minister to these effectively, it will survive, for they are the marginal units by whom human values are today determined.

Once again, in America we have a time when the "soil is holy."

The modern prophets of the holiness of the soil are economists. These men value the soil for its utility in meeting the needs of the whole people. The soil is holy in their estimation because only by its conservation can the poor be fed and clothed. The test of American husbandry is its value to landless men, tenant farmers in the country, and workingmen in the city, who do not own the tools by which they get their living. The soil is declared to be holy by the scientific agriculturists, because it has values for our children as well as ourselves. It must not be wasted, or robbed or exploited, because to waste the soil is to rob the poor and to increase the cost of living for the workingman and to lay burdens upon our children, yet unborn.

We have, then, a new kind of holy man and woman in this country. I think it is fair to say that no woman in America is more loved and revered than Jane Adams, who has devoted her life to the service of marginal people in Chicago. The leading member of the Negro race, who possesses the respect and affection of both the White and the Negro, is Booker Washington, who is ministering to the
Negro as a marginal element in the American population. The poor, that is, they who are without land and without ownership in the tools of modern industry, determine the moral and spiritual conditions in the community. Tenants and farm lands set the moral tone with the same precision with which the marginal mill hand fixes the wages in the cotton mill. For this reason institutions such as the country church are obliged to turn their attention to the service of the poor. The country church and the country school will survive or perish by the ministry they can render to the duller and weaker folk in the country. To help them is to help all. This can be said of no other class in the country community. The poor are the distributing centre of all advantage for the community, as a whole. The dull and the ignorant who are just able to survive in the community must be the target of all policies which are to have value for the whole community.

This is the reason why the country school needs to be improved. The one-room country school has had great influence upon the bright and ambitious pupils, who loved books and desired to get on. It has sent them out of the community, being organized "as if to populate the city at the expense of the country." But the country school must be reformed in the interest of the dull but industrious, who will permanently live in the community. The determining principle in reforming the country school is to make it an institution for teaching agriculture and giving general industrial training to those whose lives shall be lived in that community.

We have churches of this sort. Du Page Church in Illinois, under Mr. McNutt's pastorate, has ministered to the needs of the young people in a populous countryside. It has satisfied the social requirements of that community and thus served all the needs of the people there.

West Nottingham Church in Maryland, under the leadership of Mr. Polk, has become a centre of better agriculture. In an old farming country where the tillage of the soil must be radically improved, Mr. Polk has become conspicuous in the Farmers' Club, which is reorganizing the farming industry on a scientific basis. This church is re-establishing the farming population and making it permanent on a basis of husbandry.

The uniting of a whole community in one church was my own task in this State in my first ministry in Duchess Country. The determining principle in organizing this church at Quaker Hill was that all the Christian people of the community should be served by the new organization. Members and attendants of all the denominations were received into this small church. At its organization it was sanctioned by the five congregations surrounding it, representing five different denominations.

At Rock Creek, Ill., and at McNab, Ill., the leading members of the country church have in each community effected the reconstruction of the country schools. They have secured in the open country a centralized and consolidated school through which the retirement from the farms has been stopped and the building of the country community has been made possible.

"The best farmers in America," says Prof. Carver of Harvard, "are the Mormons, Scotch Presbyterians and Pennsylvania Germans." I am not an authority on Economics, but I can lay alongside of this statement the fact that the best country churches in America are Mormon, Scotch Presbyterian, and Pennsylvania German. These farmers till the land by their religion. They worship God as united farming communities. They think the land is holy, as Dean Bailey has declared. They have not been affected by redistribution of land. Their acres are not for sale, neither are their country churches suffering any distress, because they have long ago discovered and continued to practice the principle that agriculture is a religious occupation and the Christian Church is a perfect expression of the devotion of the rural economy.
CAUSES FOR TUBERCLE BACILLI IN MARKET MILK AND METHODS FOR THE CONTROL OF BOVINE TUBERCULOSIS

By Veranus A. Moore
Director of New York State Veterinary College, Cornell University
Presented before the New York Farmers, Feb. 21, 1911.

In order to appreciate the significance of bovine tuberculosis fully it must be understood in connection with all of its relations and conditions. In recent days our people have awakened to its destructiveness, the suffering it occasions and the hardships it has brought to humanity. It would seem from the great activity of the present concerning it that tuberculosis was a new disease of cattle. This is not the case, but quite the contrary it is one of the oldest affections of the bovine species of which we have identified records. Long centuries before the Christian era there were ecclesiastical enactments against the consumption of the flesh of tuberculous cattle. All down the centuries the enactments of the people of one generation concerning it have been modified or rescinded by those of the succeeding ones.

The real problem with tuberculosis began to unfold itself with the discovery of the tubercle bacillus in 1882. This proved that tuberculosis was a specific infectious disease. It was believed by Koch and those following his methods that the bacilli of tuberculosis of man and other mammals were identical. The next important discovery was tuberculin. Koch found in 1890 that the fluid on which tubercle bacilli had grown possessed certain properties among which was that of causing a rise of temperature in animals suffering from active tuberculosis. In testing this, it was found that large numbers of apparently healthy cattle were infected. This gave rise to the great movement in this country of testing dairy cattle with tuberculin and killing the reactors. To do this the States were called upon to make large appropriations to partially compensate the owners for the animals destroyed.

The sanitarians and others who advocated this procedure were working on three hypotheses: (1) that the human species was being extensively infected with the bovine germ; (2) that tuberculin was an infallible diagnostic agent, and (3) that all infected cattle were spreading the bacilli.

In 1898, Dr. Theobald Smith reported his very significant findings that there were three distinguishable differences between the human and bovine tubercle bacilli. These were differences in the appearance of their growth on blood serum, their morphology and their virulence. He pointed out that the bovine germ was virulent not only for guinea pigs but also for rabbits, cattle and other species, while the human species possessed little, if any, disease producing power for these animals other than the guinea pig. This was followed in 1901 by Koch's famous paper at the International Congress on Tuberculosis in London at which he gave the impression that human and bovine tubercle bacilli were entirely different. This caused considerable consternation in the ranks of the sanitarians. It stimulated a large number of investigations, many of which have been continued until the present time. The German and English governments appointed commissions to investigate the subject. The result is that two very well-defined varieties of mammalian tubercle bacilli have been determined, one in man, the other in cattle. The further fact has been made very clear that young children are frequently infected with the bovine type of the germ.

The many examinations for tubercle bacilli in the market milk of our large cities have shown that from five to sixteen per cent. of the samples contain tubercle bacilli. This is a fearful in-
dictment against our milk supply. It discloses a menace to public health resulting, according to statistics, in the death of from 100 to 200 children annually in this city alone. Economically it threatens the milk industry by creating a legitimate fear of this most natural of all foods.

The questions I was assigned to answer are, Why are there so many tubercle bacilli in the market milk of our large cities, and what methods are there for the control of tuberculosis in cattle?

The explanation for the bacilli in the milk is found in two facts. First, the ordinary inspection of dairies by Boards of Health is made largely by laymen, who are not qualified to judge of the physical condition of the cows which are producing the milk. The second is that the severity of the American method of testing with tuberculin and killing the reacting animals has discouraged dairymen from making the test privately, and the State appropriations have been too small to have them made officially. The result is that an efficient, systematic method to prevent the entrance and to check the spread of tuberculosis in cattle is being followed in a very small percentage of our dairies. Again, other factors have contributed to the present conditions. Among these is the former habit of selling at auction badly infected herds, often pure breeds, where owners of sound animals bought one or two individuals to improve their stock, but in so doing they unfortunately, and perhaps innoxently, bought centers of infection. Another cause is to be found in the constantly increasing demand of the growing cities for more milk, and the demand is continuous throughout the year. This has revolutionized the former methods of handling milch cows. To supply the demand dairymen must keep their herds milking throughout the year, hence they buy fresh cows and sell the dry ones. By reason of this a mighty stream of living cattle is constantly flowing through our dairy districts. Many of these animals are infected but they continue in the stream until they become well advanced cases and spreaders of the virus before they are sold as "band boxes" to certain dealers who dispose of them for certain forms of cheap meat. It is the presence in the dairies of advanced cases of pulmonary or intestinal tuberculosis and cows with tuberculous udders that causes the large number of tubercle bacilli to be found in our market milk.

The control of bovine tuberculosis has been a subject of much thought. Many of the channels nature provided for the dissemination of tubercle bacteria have not been closed with the promptness that might be expected. The control of a disease like tuberculosis in which the infected animals still retain their productiveness for a very long time, presents difficulties of both sanitary and financial significance that are hard to adjust.

The American system of tuberculin testing dairy cattle and slaughtering the reactors has been, and still is being carried out as extensively as the State appropriations permit. It was found, however, that there were too many animals infected to apply the method generally, as sufficient funds were not forthcoming. As a result the official use of tuberculin is greatly restricted. In 1910, only about one per cent. of the cattle of this State were officially tested. The milk consumers and often the health authorities in this country have demanded the tuberculin testing of cattle and the slaughter of the reactors—no matter how slightly they were affected—or they have been content to do nothing. Our people have not been willing to abide by conservative, progressive methods that would steadily increase the purity of the milk and eventually eliminate the disease. Bovine tuberculosis has, under the changed conditions in milk production, had an opportunity to spread rapidly owing to the great increase in cattle traffic.

In the American plan of control two theories have been accepted as working hypotheses, namely, that a single tuberculin test is sufficient to detect all infected animals, and secondly that
all animals that react are immediately
dangerous, that is, they are active in
spreading the disease.

A long and careful study of tuberculin has shown that with a reaction
there is present an active tubercular
infection, but failure to react does not
prove the absence of infection, for the
disease may exist in the so-called
period of incubation or its progress
may have been arrested. In either
instance it may develop later and per-
haps rapidly destroy the animal. The
criticisms against tuberculin are often
based on a lack of knowledge of when
it can cause a reaction and when it can
not. Because of a neglect of these im-
portant facts herds have been tested
once, the reactors destroyed, but no
subsequent tests made to detect the
possible recently infected or latent
cases. These have developed later,
the disease spread and the last stage of
the herd has become more serious than
the first. For this tuberculin has
been unjustly blamed, for when
properly used it is the most effective
diagnostic agent known to the medical
professions. To use tuberculin effec-
tively the test must be repeated. In
buying cows it is the sound herd from
which to purchase rather than the
non-reacting individual from the
diseased dairies.

The other supposition that all re-
acting animals are immediately dan-
gerous has also been a topic of much
investigation. For several years I
have been working on this subject.
We have made single examinations of
the milk and feces of a large number of
reacting cattle and again we have
made repeated examinations of the
milk and excreta from a few cows
extending over a period of 18 months
at least. Our results thus far have
shown that the milk of cows with udder
tuberculosis contains tubercle bacilli
usually in enormous numbers. It is
stated that from one to three per cent.
of tuberculous cows have the disease
localized in the udder. In advanced
pulmonary tuberculosis the bacilli
appear in the feces and may occur in
the milk through fecal contamination.
In reacting cows in which no evidence
of tuberculosis can be found on a
physical examination, tubercle bacilli
have not been discovered in either the
milk or the excreta. There are re-
ports of investigations along this line
that largely confirm these findings. If
these results represent the facts
generally, it will be possible to greatly
reduce the number of tubercle bacilli
in market milk by having the cows
furnishing it given careful physical
examinations at short intervals and all
suspicious animals removed.

In Europe there are in operation at
least three methods for the control of
tuberculosis. The Bang method,
named after its distinguished author,
Prof. B. Bang, of Copenhagen, con-
ists in eliminating all of the clinical
cases, in testing the remaining cows
with tuberculin, separating the re-
actors from the well and keeping them
for breeding purposes. By this
method the farmer is enabled to even-
tually build up a sound herd from the
infected stock. In Denmark, how-
ever, the farmer is allowed to sell the
milk from the reacting but clinically
sound cows. This method has been
applied in fully 10 per cent. of the
dairies of Denmark. It requires rigid
separation and frequent testing of the
non-reactors in order to detect latent
cases. Its great advantages are that
it recognizes the rights of the cattle
owners, educates them in the nature
of the disease, enables them to build
up sound herds and further it affords
protection to the consumer in that it
eliminates the bacilli spreaders.

The Ostertag method, generally
recognized in Germany, consists in a
thorough physical examination of the
cows and the removal of all suspicious
cases. Tuberculin may or may not be
applied. If it is used the reactors are
not separated from the others. The
calves are raised tuberculous free by
feeding them the milk from nurse
cows. The animals are thoroughly
examined at short intervals. The
theoretical basis for this method is
that the disease can be detected by a
thorough physical examination before
it has advanced sufficiently for the
infecting bacteria to escape. Prof.
Ostertag states that the method, if rigidly carried out, will protect the milk from infection and eventually eradicate the disease from the herd. While it affords little or no protection for inter-herd control, it seems to be effective for intra-herd eradication. At our Veterinary Experiment Station we are now testing this method on a small number of experimental cattle.

The third European procedure is known as the Manchester method. It is used perhaps more than any other in Great Britain. It consists in making regular examinations of the market milk for tubercle bacilli. If they are found, the herds from which the milk came are carefully examined and the cow or cows eliminating the bacilli are found and excluded. This method seems to deal with the immediate dangerous animals only. However, Delapin of Manchester and Boyce of Liverpool report a far better condition relative to tubercle bacteria in the market milk of their cities than the health authorities of our large cities have recorded.

After carefully studying these various methods, discussing them pro and con with their authors and examining the herds in which they are being applied, one can not help but feel that in the eagerness to obtain absolute safety at once and to eliminate a great scourge from our cattle, the radical position taken by our people has tended to make progress slowly. Dairymen have objected to the slaughter of their best cows which appeared to be well, while they would not object to the removal of all clinical cases or suspicious animals. The experience with the Ostertag method in Germany can not be set aside without some reflection. The Bang method would perhaps be open to less objection in this country if dairymen could sell the milk from cows that have reacted to tuberculin, but which exhibit no physical evidence of the disease. At present our dairymen object to the Bang method because the milk can not advantageously be used.

To summarize these somewhat brief and fragmentary statements, there seems to be justification for the following conclusions, namely:

1. The frequency of tubercle bacilli in our market milk is due to the fact that there is no efficient method for the control of tuberculosis in operation in a large majority of herds furnishing milk to the cities.

2. The American method of control acceptable to our sanitarians and milk consumers is so severe in its operations upon the dairymen that they are not willing to apply it. The established methods in Denmark and Germany, which could be applied and which would give constantly increasing safety to milk consumers, are objected to because the cows under such control might respond to the tuberculin test.

3. The remedy seems to be in a more rational view of the situation and in utilizing the valuable feature in each of the methods. Dairies producing milk should be carefully and frequently examined by competent veterinarians and the suspicious cases promptly removed. Sound herds should be grown up to take the place of the infected ones. Tuberculin should be used, when possible, to hasten the result, and the reactors eliminated in as economical a manner as possible. The crux of the whole situation, as far as the protection of the milk consumers and the spread of the disease are concerned, rests in the detection and removal of the cows that are about to become spreaders of the specific organisms. For this we are absolutely dependent upon an accurate knowledge of the natural channels through which the specific bacteria are eliminated from the diseased animal and our ability and power to close the channels through which they gain entrance to the healthy individuals.

Tuberculosis is a parasitism that has come to be a great destroyer of man and of cattle but like other injurious agents it will disappear when people learn to avoid it.
THE AGRICULTURAL SIDE OF OUR FORESTRY DEPARTMENT

By Edwin Smith, '12
Michigan Agricultural College

Even though the Engineering student of the Michigan Agricultural College often claims that its title is a misnomer and just as often threatens to change it to "The Michigan State College," yet we hardly think that our Foresters would molest the name of their Alma Mater, the oldest school of its kind in the United States, since the work of growing and handling trees is so closely related to agriculture itself. So closely does it follow agricultural lines that the basis for the work is the same as that for the agricultural students until the beginning of the spring term of the Sophomore year, when the Forestry students take up the technical side of the subject and thus make a separation between the producers of fruit and animals and the growers of trees.

In more ways than this is our Department of Forestry linked with the interests of the farmer, for among its purposes there is one that is a direct benefit to him. Prof. J. Fred Baker of the Forestry Department says: "The purposes of the Department are two-fold. It aims to give the Agricultural students a working knowledge of how to handle their woodlots on the farm; and second, it endeavors to turn out technical men in forestry who expect to make forestry their life work." The latter group of men are graduated with the degree of Bachelor of Science and afterward fill positions such as city or corporation foresters or go into the service of the state or federal government, which pays $1100.00 per year for the services of a forest ranger the first year he is in the service. The other group of students get an idea of how a farm woodlot may be utilized in other ways than that of a public hunting-ground.

This phase of the Agricultural student's college instruction is naturally very broad, and practical to the extreme. The aim of such an arrangement is to give a general knowledge to the future farmer so that the farm woodlot may be so handled, as to give a continuous supply of wood and timber that is used by the farmer upon whose farm the woodlot is situated. Besides paying attention to the selection of sites, tillage, planting, cultivation and general care, the work embodies some practice in estimating tracts and harvesting the timber. For this the college forests are used as laboratories. The men are divided into squads and provided with chains, calipers, and field tally-boards. Taking a strip across the tract, the men handling the calipers call out the tallies to the headchainman, getting the diameter breast high of the various species of trees in the stand, taking measurements of one square chain at a unit. After ascertaining the average D. B. H. (diameter breast high) an average tree is selected, cut up and the number of feet computed in the average tree, and later of the whole stand. This and the Richt Height method are the only methods the Agricultural students become familiar with. In addition to this, various log rules are worked with so that if in after years the man taking this course lets someone else purchase a stand of timber on his farm for a small part of what it is worth it will only be due to the generosity of the farmer's heart, and not to his ignorance of the value of his property.

Through lectures and laboratory work an acquaintance is made with the species of trees that have economic importance in this region of the United States, so that enough is known of their botanical characteristics as to enable the student to easily identify our native trees, besides familiarizing himself with their geography, local occurrence, soils, growth, tolerance of shade, reproduction, diseases and uses of the wood.
A little study of the habits of trees gives a man a greater appreciation of the environment that surrounds him at all times and also gives to him, companions that he never could have known. Too many of our farmers of the present day go through life oblivious of many would be friends and companions. It is not necessary that the farmer should retain all of the botanical names of the trees, yet it is of no little importance that he should know what kind of a location the White Pine desires or what kind of a soil the Catalpa Speciosa thrives best in, for he may have a tract of abandoned land that would be home for the one and destruction to the other.

One important item considered, and one that all farmers should pay some attention to, is the growing of trees for fence post timber. Many men have five, ten, or fifteen acres of side hill or lowland, returning little or nothing in way of pasturage, which land, if converted into a systematic woodlot would pay nearly as well as the more desirable portions of their farm. To illustrate this we will consider a tract of Locust or Catalpa which will produce a post 6 inches at the butt, 4 inches at the top and eight feet long in ten years. It requires 2722 trees to set one acre, setting the trees four feet by four feet. The Department of Forestry furnishing the nursery stock to the farmers throughout the state for the actual cost of production, the cost of foresting one acre would be as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost per Acre</th>
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<tbody>
<tr>
<td>2722 Nursery Trees at $3.00</td>
<td>$8.16</td>
</tr>
<tr>
<td>3 years Cultivation at $1.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>Preparation of Land at $5.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>Planting at $2.00</td>
<td>$5.44</td>
</tr>
<tr>
<td><strong>Total Cost per Acre</strong></td>
<td><strong>$23.10</strong></td>
</tr>
</tbody>
</table>

At the end of ten years we get 2500 posts which will bring 100 cents each on the stump. This would be an income of $250.00 minus $23.10, cost of foresting, or $226.90 per acre for ten years, which will equal $22.69 per year. This would be equivalent to raising nearly thirty bushels of wheat per acre, with but a minimum of labor and worry.

Attention is also paid to the seasoning of timber and the preserving of posts in creosote before setting them. This is an operation which, as has been
shown by the various Experiment Stations, increases the life of a post’s usefulness from two to three times and one that costs only from five to eight cents per post.

The above serves to illustrate that the coal mines of Alaska, the swift-flowing streams and waterfalls of our mountainous regions and the immense forests of the Rockies do not possess the only opportunities for the present day eagerness for conservation; but that in such a thing as an insignificant, weed-hidden chunk of lowland on the back part of the pasture lot, dollars are yearly going to waste, and all for the same reason that fires are making nude the hills that feed our large rivers, the reason some call neglect. But it is not altogether due to neglect for in some degree it is due to lack of knowledge. We must know something of trees, their habits, their relative qualities and their characteristics before we can conduct a systematic forest management in the woodlot, just as much as men need to be trained to protect the forest wealth of the West.

We have all read of how German forests not only are keeping up the supply of timber in that country but are actually paying the expenses of government of those localities that maintain a state forest. Michigan’s plan to help her forestry conditions lies not only in reforesting cut over areas and promoting a wise handling of the forest areas within the boundaries of the state, but also in influencing the farmers to carry out private systems of forestry for home consumption. To do this the Department of Forestry not only furnishes education but maintains a forest nursery for the purpose of supplying farmers with desirable nursery stock at a minimum cost.

So in this province, the instruction of the Agricultural student, lies one of the minor, yet significant means by which our Forestry Department is seeking to help to solve the great forestry problem. It not only means more utility of the farmers land, but means a cessation of the neglect that the country people have been showing the opportunities for pleasure and profit that lie in their surroundings. It is one step towards Conservation.
FOREST REGULATIONS IN ONTARIO

By A. E. Parlow
Forestry Student in the University of Toronto

All the land in the Province of Ontario belonged originally to the Crown, and in the case of woodlands, the right to cut only, is sold; the title to the land itself remaining in the Crown. In buying a "limit," there are three payments: first, a "bid" made at open auction, called a "bonus," second, "dues," according to the amount cut. This is determined by government scalers. Third, "ground-rent" per square mile per year. Formerly there was no time limit and the holder of a large tract by regulating his cut by the annual increment, could cut the same tract over again and again, thus paying for his lumber a merely nominal ground rent but now the licensee has a certain number of years to get the stuff off.

The Ranging System of Ontario was established in 1855, as an experiment, when a few men were placed on licensed land as fire-warders. Prior to that, there was an Act to protect forests on the Books but it was not enforced. The men were chosen by the licensee and their salaries were paid, one-half by the licensee, and one-half by the Government.

Later the Government found it necessary to assume the power to appoint men on lands where the licensee failed to do so, charging the expense of the same to the holder of the license. *"This action was taken because it was not fair that the man who policed his own territory well, should be exposed to danger from fire running in from an adjoining limit, the owner of which was either too parsimonious or too careless to put on the necessary rangers." The Government was also to supervise the work of the men in the field and make sure that they did not undertake any other employment while on duty as "rangers."

Settlement, survey parties, railway construction and the discovery of great mineral wealth sent thousands of men into the "bush" in Northern Ontario and all these men carried fire with them, so it was decided to extend the Ranging Service to the unsold territory of the Crown, and men were placed along the railways. These men were supplied with railway velocipedes, with which to cover their beats. Men were also placed along the important water-ways and canoe-routes. On the unlicensed land, the entire cost of the Service fell, of course, upon the Government.

The men are sent out in couples on both canoe and land-patrols, and are supplied with a complete outfit, consisting of a canoe, a 7 x 7 tent, three pairs of double blankets, a rubber sheet, shovels, buckets, axes, and a cooking outfit. They are given printed copies of the "Fire Act," and cotton posters with the Act and the Game Laws, for the Fire Ranger is Game-warden as well, and these posters are tacked up in conspicuous places. Then, too, there is a little red Diary in which the weather, the Ranger's daily movements and any unusual incidents are noted, and which must be handed in at the end of the Season.

Last year, 1910, there were over nine hundred men in the Service, divided about evenly between canoe and land-patrols. Four hundred and sixty of these were on unlicensed land and the cost to the Government in wages alone was about two hundred thousand dollars. They are paid two dollars and a half a day, for seven days in the week, and board themselves, going into the "bush" in May and coming out about the thirtieth of September.

A new agreement has been reached within the last few months by means of which the entire cost of ranging in the licensed territory, falls on the license holder, on the understanding that ground-rents, which recently jumped from a dollar and a half to

*From Report of Minister of Lands, Forests and Mines.
five dollars a year, shall not be raised again for ten years.

During the season of nineteen ten, there were three hundred fires set out that were traced to locomotives, and it is expected that more stringent legislation will soon be enacted regarding the liability of railway companies. Under the present law there is a penalty, "not exceeding $50.00 or three months in the common jail," for setting fire in the case of individuals, and of $100 for each offence in the case of railways. This has not proved satisfactory.

In the coniferous forests of the "north country" fire sweeps through a stand very rapidly and fiercely, killing all growth but leaving standing timber dead, yet sound, which can be cut within two or three years of the burn, after that, insects and rot commence. For the lumberman, in many cases such a fire is not very serious, but on the other hand, the young stuff, which is to replace the present stand is killed, the earth and humus, the product of centuries of weathering and accumulation is destroyed, and one fire usually being followed by another, the district becomes a veritable wilderness.

Fire-fighting is difficult always and especially so in sparsely populated districts. Two men cannot stop a forest-fire, but two experienced, watchful men may often head off small fires before they attain dangerous proportions, and in case of larger fires, can call out men and take charge of the fire-fighting operations. In such cases the Rangers have the powers of a constable in pressing men into the Service, and afterward send through their chief, vouchers, to the Department for wages of the extra force.

It is impossible, however, to police so vast a territory thoroughly, and probably the most valuable service performed by the Ranging System, is its educational function. By placing posters where they will be seen and read, by warning campers, settlers and others of the danger of fire, by distributing printed copies of "The Act" and by their mere presence, they are slowly helping to mould public opinion, which is after all the best safeguard.

TYPICAL FOREST ON THE YUKON FLATS ABOUT TWENTY MILES BELOW FORT YUKON ON THE ARCTIC CIRCLE. TIMBER CHIEFLY WHITE SPRUCE, TWO TO EIGHT INCHES IN DIAMETER AND UP TO FIFTY FEET IN HEIGHT; SOME BALSAM POPLAR AND LARGE WILLOW.
Reproduced by permission of U. S. Forest Service.
Some Suggestions as to How a Young Man with No Capital May Get Started in Farming

By G. F. Warren
Professor of Farm Management and Farm Crops, Cornell University

Farming in America is rapidly changing from an occupation, to a business. Formerly only a few cheap tools and a team were required. Farming was much like teaming or any other occupation requiring little capital. Men frequently shifted back and forth between farming and other occupations. The introduction of machinery has gradually taken farming out of the mere occupation class, and placed it in a class with other kinds of business that require the permanent investment of considerable capital. The change has been most rapid during the past ten years.

Some types of farming are less affected than others. The milking of cows and the growing of some kinds of vegetables are still in the hand labor class. Some farmers still cultivate corn with one horse and dig and plant potatoes by hand, but their number is rapidly decreasing. Every farmer, who adopts a desirable new machine, makes it harder for the one who depends on hand labor to compete.

More horses per man, more and larger machinery, all call for larger farms. The area farmed per man is rapidly increasing in all parts of the United States. This accounts for decreases in rural population in New York, Iowa, Missouri and other states. It accounts for empty farm houses.

Each farmer in America is farming more land than was farmed by one man ten to twenty years ago, and is at the same time increasing the crop yields per acre. Crop yields in the United States are increasing, not decreasing as is commonly assumed.

When all these conditions call for so much capital, can a young man with no money hope to earn a farm in a reasonable time? The road to farm ownership is not closed but there have been changes in the best method of travel. More time and effort are required than formerly, but a well equipped modern farm is worth time and effort.

First, Get an Education

The first step that a young man should take is to secure an education. The chances are that by this means he will actually own a farm sooner than if he at once sets out to get one. The figures from the agricultural survey are significant.

<table>
<thead>
<tr>
<th>Education</th>
<th>Number of Farms</th>
<th>Average Labor Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>District School</td>
<td>398</td>
<td>$318</td>
</tr>
<tr>
<td>High School</td>
<td>165</td>
<td>$622</td>
</tr>
<tr>
<td>More than High School</td>
<td>10</td>
<td>$847</td>
</tr>
</tbody>
</table>

Labor Income is determined by subtracting the farm expenses and 5 per cent. interest on the capital from the farm receipts.

A high school course is worth more than an investment of $6000 in five per cent. bonds. We do not have figures for a large number of college men, but a college course seems to be worth as much more. Time spent in school seems to be worth about $7 per day to a farmer.

Anyone can check these ideas if not the figures. We hear men regretting all kinds of acts. Those who have cows are sorry that they did not plant orchards. Those who have orchards wish that they had different varieties. Those who went West wish that they had gone South. Those who are not married wish that they were married and sometimes those who are married wish that they were not. But who ever heard of a man wishing that he had not gone to school so long? Franklin was right when he said that an investment in knowledge pays the best interest.
THE FIRST START IN FARMING

For a farm boy without an agricultural college education, the best way to start is as a hired-man. If the neighborhood is a prosperous one, that is the place to begin, if not, go where farmers are prosperous. By working from two to five years, he may save enough money to become a tenant. If he has proved himself both worthy and efficient, he will have no difficulty in renting a good farm.

In whatever position one is working, he should strive to earn at least twice what he gets. Men do not buy cows, land or labor unless they expect to make a profit on it. If one gets all he earns, why should any man desire to hire him? When the salary is raised, it is not because the employer thinks that the increase will be earned, but because it has been earned. This holds true on farms, in shops, in universities, everywhere, one must always earn his increase in pay before he gets it.

A graduate of an agricultural college who has grown up on a farm can usually start best by teaching, in experiment station work or as a farm manager. By taking the best position available, when experience, opportunity and salary are all considered, he should be able to save more in a year than the farm hand receives.

A position that calls for travel and study on farms is very desirable for one or two years. A place as farm manager on a real farm is good both because of the experience and the low expenses. Some of the best paying positions are as managers of estates. The experience gained on such places is often harmful. If any ideas are gained, they are likely to be extravagant notions that are adapted to spending money—not to making money.

The college graduate usually skips the tenant stage. In such cases the farm should be bought as soon as one has money enough to secure the place on contract or by part payment. The farm is then rented while one continues in his position. In this way a farm may be bought long before it could possibly be purchased if one were to attempt to equip and run it. The salary should usually pay the interest and some of the principal. The rent may be applied on the principal. Either the salary or rent should pay the interest. It is not likely that both will fail in the same year. If one were on the farm and had a crop failure, he might lose the place. When the farm is largely paid for, one may move onto it. This is the plan followed by nearly all the men who wish to farm and who are in experiment station and government work.

One great advantage of buying a farm as soon as possible is that it ties one to the land. A salaried position may wean one away from the farm. The farm furnishes a place to spend vacations. It forces one to economize in his youth. There is a general tendency for land values to rise. If wisely chosen, the rise in value of the farm may be equal to the interest.

The first farm purchased need not be the one on which the final home is to be made. If it is a good investment, it may be sold and a larger and more desirable place may be purchased.

In choosing a farm, productive soil is the first consideration. It rarely pays to work a farm that is not located in a prosperous community.

STARTING AS A TENANT

If one becomes a tenant in the progress toward ownership, the following tables may be of interest:

<table>
<thead>
<tr>
<th>Capital</th>
<th>Average labor income per cent. making labor incomes of</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3000 or less</td>
<td>Farms operated by owners</td>
</tr>
<tr>
<td>3000—4000</td>
<td>$225</td>
</tr>
<tr>
<td>4000—5000</td>
<td>242</td>
</tr>
<tr>
<td>5000—6000</td>
<td>339</td>
</tr>
<tr>
<td>over 6000</td>
<td>459</td>
</tr>
</tbody>
</table>

131 tenants with capital of less than $1,000, averaging $1,187, made an average labor income of $367 and 15 per cent. made over $600.
It appears that one should remain a tenant until he can command at least $5000 capital. Of this perhaps one-third might be borrowed. It is much better to be a tenant on good land than to be an owner of poor land.

Cash rent is much better for the tenant than is share rent. If you own a farm, as a landlord, it is better to give it the additional attention required and rent for a share, but if you are a tenant, it is best to rent for cash.

### Relation of System of Rental to Profits

<table>
<thead>
<tr>
<th>Tenant's labor income</th>
<th>Landlord's per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$604</td>
</tr>
<tr>
<td>Half of crops</td>
<td>467</td>
</tr>
<tr>
<td>Half of receipts</td>
<td>342</td>
</tr>
<tr>
<td></td>
<td>5.2%</td>
</tr>
<tr>
<td></td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>9.0</td>
</tr>
</tbody>
</table>

No tenant should ever milk poor cows on shares. It is bad enough to raise poor crops. If a landlord furnishes half the feed and cows and gets the manure and $5 per cow above the cost of feed he may be making money. But in this case a tenant gets only $5 for his labor of caring for a cow a year. It takes good cows to pay a tenant, poor ones may pay the landlord.

### Part Owner

If one is farming with too small a capital, he may often own part of his land and rent a part. This is a plan followed by very large numbers of farmers who are short of capital. How successful it is, is shown by the following table:

#### Owners Renting Additional Land

| Owners operating their own farms only. | 529 | 105 | 0 | $407 |
| Owners renting additional land.        | 86  | 89  | 51| 522  |

### Types of Farming with Small Capital

When one is very short of capital, he should make very few long time investments. Planting orchards, putting in tile drain, raising colts, expensive cows, should not be taken up too quickly. All these may be the best possible things when money is available, but when the interest must be paid next fall, quick returns must be secured. Second hand machinery may be purchased, and the more expensive tools be hired. Paint is one of the last of the desirable investments.

Of the farmers in Tompkins County who operated their own farms and who had less than $3000 capital, five made labor incomes of over $600, the highest was $794. Three of these worked additional land on shares. Of the farmers with $3000 to $4000, ten made labor incomes of over $600, the highest was $800. Potatoes, hay, eggs were the chief sources of income on these farms. Dairying usually requires more capital. The cash crops that bring quick returns are the ones that have paid such persons best. A better way is to rent additional land.

It now takes longer for a hired man or a man on a salary to earn a farm than it used to, but the farm is now much more worth while. Any young man with health and energy can earn a farm. Probably he can earn it as soon as he could secure an equally desirable business in a city.
LITTLE FISHES IN THE BROOK
By L. H. Bailey

THE farmer is rapidly developing new points of view on all his operations. Many of these changes have been so radical as to surprise everybody. Some persons seem to think that we have now torn up and challenged everything, and that the farmer may hereafter abide in peace. Some of us know that this is not so; and I was specially impressed that it at a rational conception of the subject. Our fish-hatchery system is developed on the science of the past generation, and it is now inadequate. It proceeds on the principle of breeding numberless fry and then placing them wholesale into ponds and streams that may be inhabited by all kinds of fish and that may present all kinds of conditions. The result is

is not so when Dr. Needham dropped into my office the other day and began to talk about fish. His conversation interested me so much that I called the stenographer and jotted some of it down; and here it is.

DR. NEEDHAM TALKS ABOUT FISH.

We shall come to the time when the farmer must use his streams and ponds for the rearing of fish. The farmer ought to raise his fish just as much as he raises his pork.

We do not yet have sufficient knowledge to enable us to give exact advice as to how the farmer is to rear food fish, but we know enough to realize that we have not yet arrived that a very small proportion of the implanted fish survive to maturity. Many fish are carnivorous and eat their young. It is not profitable to feed big fish on little fish, any more than it is profitable to feed big pigs on little pigs.

In the early days we allowed our pigs to roam over square miles of territory. They lived as best they could on what they could pick up. At present, we confine our pigs in small areas and grow the food for them on other areas; and we have more pigs and better pigs than we had before. Similarly, we must now begin to control and domesticate our food fish. Most farms in the East...
have creeks or ponds, or places where ponds could be made. These ponds and pools should be cleaned of all fish except the kinds that are to be grown; and the food for them should be produced in other ponds alongside and which are connected with the fish-pond. In the future it will be just as necessary to raise the proper food for fish as it is to raise the proper food for pigs. We have only begun to study the question of natural fish forage. Of course, we can feed fish on purchased cereal food, but this is expensive, and the practice is just as irrational as it is for a man to buy all the feed for his pigs or his cows. The vegetable matter, May flies and other organisms that fish eat may be isolated and grown in pools and ponds particularly adapted to them, in the same way that potatoes are grown on fields that are adapted to potatoes and prepared for them.

In the old days it was sufficient merely to grow pigs. They might be razor-backs or anything else. At present, we are growing different breeds of pigs, one kind being adapted to the making of bacon, another to the production of hams, another for lard, and so on. Just as consciously must we breed varieties of fish. With the exception of some varieties of carp in the Old World, we have no domestic breeds of food fish. There is every reason to expect that from our bass, our perch, our cat-fish tribes, and others, we can develop forms that will be specially adapted to different conditions and to domestication.

Having ponds regularly prepared for fish and adapted to them, and having developed varieties or breeds for particular conditions and uses, we shall plant our ponds with fish as rationally and as carefully as we plant our fields with corn. If a farmer were to scatter his seed-corn broadcast throughout the woods he would not expect much of a crop; and yet we throw our fish fry into ponds that may be just as poorly adapted to the growth of these fish as are the forests for the growth of corn. Our fish-hatcheries and the stocking of ponds now proceed from the sportsman’s point of view. All this antiquated method must go, and we must begin to rear fish as accurately as we rear fowls.

We shall recognize that there is property right in fish, just as there is property right in pigs and sheep. We shall not allow fishers to fish everywhere indiscriminately just because they happen to find a piece of water in which fish live. They will be allowed to fish only in public waters. The farmer will raise his own fish in small ponds and he will have a right to all that he raises.
It will not require a very large pond to supply a family with all the fish that it wants. It ought not to be more trouble or expense to handle a farm fish establishment than to handle a farm poultry yard or a drove of pigs. We shall find in time that an acre of water may be more profitable than an acre of land.

THE POLICY OF THE LEHIGH VALLEY RAILROAD IN AGRICULTURAL DEVELOPMENT

By F. R. Stevens, Agriculturist

The type of railroad development is to a certain degree changing. Instead of extending into more territory, the roads are taking up the question of internal development and economy. In endeavoring to accomplish this the various roads have adopted plans differing widely from each other.

The plan of the Lehigh Valley Railroad is substantially as follows. An agriculturist was appointed in the Department of the Industrial Commissioner and he is called into consultation on such purely railroad problems as the placing of sidings, spurs, etc., in agricultural territory, the care of farm lands, purchased incidentally in acquiring right of way, care of live stock owned by the Company and minor matters of this type. His principal duties are to assist, in every way possible, in the development of the farms in the territory which contributes freight to the road. In doing this it is almost needless to say that no attempt has been made contemplated to change the type of farming for the purpose of securing crops which will give more freightage. The foundation principle on which the road acts, is that the prosperity of a railroad is measured by the prosperity of the people living along its line. The efforts then of the Agriculturist have been to assist the farmer in each case, to develop along the line of his own inclinations or local advantages.

On invitation of any grange or other farm organization, or that of some prominent farmer, a meeting is called, in the locality, at which the Agriculturist is present and discusses some phase of agriculture of particular interest to the people in that locality. These meetings are as informal as they can be made. A large portion of the time being given up to discussion of questions at hand and as only one topic is usually taken for an entire session, plenty of time is given for free discussion after which those farmers who desire more definite information regarding their places, hand in a slip of paper, giving the name and the location of their farms and at the earliest possible opportunity, the Agriculturist visits the farm and discusses these questions in detail.

The problems most commonly brought out by the farmers are: how to grow alfalfa, the best rotation of crops, questions on the use of commercial fertilizers, care of orchards, including identification of insects and other pests and the question of effective rations for feeding animals. In answer to each of these, the farmer is asked to try a small plot in manner outlined by the Agriculturist and watch developments. If it be the question of alfalfa, he is urged to try half an acre or an acre in manner prescribed and to watch results. In the matter of fertility, he is asked to try a small plot, divided into sections, each treated with different chemicals to bring out the needs of his soils and so on with the other problems. No radical change, on a large scale, is recommended until, by thorough ex-
periment and test, the farmer himself is actually in possession of the foundation principles and is ready to go ahead on a large scale on his own initiative. The representative of a railroad is in a different position from the representative of a state or municipality in that he has no known or suspected power of enforcing his ideas as to any particular manner of doing things. In fact, save for the invitation of the farmer, he is a trespasser. This very condition seems to be an advantage rather than a disadvantage.

If there is any one subject which has been given more consideration than any other, it is the alfalfa problem. In the great dairy district along the line of the Lehigh Valley Railroad, it seems almost a necessity that the farmers should have a large quantity of alfalfa in order to produce milk economically and in the districts where fruit and grain are the principal crops, alfalfa seems much more profitable to sell for hay than any other grass that can be grown. In addition to these two reasons, it has been found that while we have for years, urged a farmer to turn under large crops of clover in order to promote soil fertility, that the temptation to cut a crop of clover and put it in the barn, has been too great and the turning under of clover has not been as general a practice as it should. When, however, he has on hand, all the alfalfa hay necessary, then the turning under of clover will be a fact rather than a theory and this will make a basis for a more profitable rotation of crops with an increase in productivity on each.

This department has been in existence now less than a year. The work, has, each month, increased in volume and we hope, in results.

SOIL FERTILITY
By Milton Whitney
Chief of the Bureau of Soils, U. S. Department of Agriculture

SOIL, as the term is used in Agriculture, usually refers to finely divided mineral particles with more or less plant remains mixed with it. Sometimes, as in the case of some peat soils, the mineral particles may be absent, but in this case mineral matter is present in the plant remains. But finely divided mineral matter does not function as a soil until a living plant or dead plant remains are fed to it; so that we cannot conceive of a soil without plant remains.

The soil has certain physical properties of texture, structure and material simulating in a degree the anatomy of a plant or animal. It has digestive and nutritive functions, and in a sense, a circulatory system.

These functions are largely interdependent and not independent variables which make the problem of investigating the cause of infertile soils seemingly very complicated were it not for our knowledge of physiological chemistry and the recent advances in the chemistry of nutrition and disease in animals and man. In fact, the chemistry of the soil is coming more and more to run parallel to the chemistry of nutrition and disease in man. The same or similar products of degradation of organic matter are being found as constituents of the soil humus as are found in the tissues of plants and animals. As we are coming to see that different races of man and different types of man, as well as different breeds of animals, differ fundamentally in the normal way they function and that in each there are abnormal functions which manifest themselves as more or less well recognized cases of disease, so we are coming to see that different types of soils have normal differences of function which adapt them fundamentally to different crops and crop associates and rotations, and that they frequently exhibit abnormal functions.
The Cornell Countryman

which render them ill adapted to the service we would otherwise expect from them.

Cultivation, cropping and fertilization undoubtedly may have a profound influence upon the functioning of soils as work (exercise) and proper care have upon the functioning of man and animal. It is easy to conceive that by improper methods of control a soil may be abused and made for a time unproductive and on the other hand it is easy to understand why under more intelligent control, the soils of Japan have for at least 6,000 years maintained a much denser population than our own country. The Japanese value an old soil more than they do a new or virgin soil because the old soil is better understood and more subject to intelligent control. As far back as records and statistics go (about 300 years) the yield of crops on the old soil of Europe and for the past 40 years the newer soils of our own country have been increasing in crop productivity.

Modern soil researches have shown that old soils (long under agricultural occupation) contain by actual analysis today as much of the mineral elements of all kinds as the newer soils of this country and modern soil philosophy cannot conceive of the normal soil in place becoming exhausted below crop requirements of any mineral substance requisite to crop production. Those who have for so long held to the mineral theory of infertility and of the food value of chemical fertilizers to replenish the supply of minerals removed by the crop have singularly overlooked the fact that, as shown by the recent compilation of the results of over 20,000 fertilizer tests made by the Experiment Stations in this country, mineral fertilizers are equally effective on rich lands as on poor lands although they may not show such relative differences in yield.

To my mind there has come a time when there is a great future in sight for soil investigators, as the economic results which have already been achieved are sufficient to base upon them a rational practice of agriculture and a rational system of diagnosis and treatment of soil abnormalities.

FORESTRY IN ALASKA

By B. E. Hoffman
Forest Assistant, Ketchikan, Alaska

It is a general opinion among those who have never been to Alaska that it is entirely a land of snow and ice. This impression is entirely wrong regarding the southeastern and southern portion at least, because the wooded areas include practically all of these portions of the territory. The Tongass National Forest contains an area of approximately fifteen million acres and it includes nearly all of Southeastern Alaska. The Chugach National Forest situated on the southern shore of the main body of Alaska contains an area of approximately eleven million acres. It is evident that the acreage is very extensive and the ordinary countryman might think that there should be an inexhaustible quantity of timber, but the greater portion is scrubby and of no value except as a surface protection to the watersheds and moderate mountain slopes. Another unfavorable condition to be found is the abundance of fungi, and consequently an excessive amount of defective timber.

Generally speaking, that portion of the Forest having any commercial value terminates at an elevation of twelve hundred feet. Western Hemlock makes up approximately 65 per cent of the stand, Sitka Spruce 20 per cent and the remainder Yellow Cedar (Chamaecyparis nootkatensis) and Western Red Cedar (Thuja plicata). Practically every stand that is of sufficient size for saw timber is over mature and one is safe in saying that this condition is partly responsible for
WESTERN HEMLOCK FOREST NEAR KETCHIKAN. TREES RANGE IN DIAMETER FROM TWELVE TO TWENTY-FOUR INCHES, AND IN HEIGHT FROM SEVENTY-FIVE TO ONE HUNDRED FEET.

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the large amount of disease. About the greatest obstacle in the eye of the lumberman or Forester at the present is the excess of Hemlock. This species is practically all affected by several species of fungi and the trunks are almost invariably fluted and irregular. However, the Hemlock is used more extensively for piling than any other tree as it withstands attack of the ship worm \( (Toredo navalis) \) very well. Spruce is the most valuable of all the Alaskan trees as its generally straight soft fiber makes it very valuable for building and box purposes. It forms approximately 95 percent of the sawtimber cut. Yellow Cedar is one of the very best of woods for interior finishing and cabinet work, yet it occurs in such small quantities that it is of little importance, at present, to the lumberman.

Lumbering in the past has ranked second to the fishing industry and as the demand for boxes in the latter mentioned business is increasing, the two will, I believe, continue growing and working together. Logging up to the present time has been done principally by hand and there are still a number of natives logging by this simple method. Such opportunities where scattering trees could be obtained along the shores with little effort and expense were ample means for the natives to earn a living while not engaged in the fishing industry. As the merchantable timber on the shore line grows small, and the demand for sawtimber increases, there comes a search up the river valleys and remote regions for steam logging chances. Steam logging outfits have been introduced for several years, but not extensively until the last one or two years and the scattering tracts of valuable spruce are rapidly being exploited. The principle of Forestry practiced in the administration of this forest in the past and present are timber sales, the annual cut of sawtimber on the Tongass Forest being an average of 17,000,000 board feet. This is a very small cut in proportion to the large area and it is estimated that a cut (under careful supervision) of 40,000,000 board feet would be a proper size to improve the Forest conditions and maintain a sustained yield.
The work of the field force is somewhat different from that in the United States proper. Owing to the excessive rainfall there are no fires to contend with and grazing is entirely absent. The mode of transportation is necessarily by water as the greater portion of the forest is islands. A gasoline launch with very comfortable quarters is kept throughout the year traveling from place to place wherever work is to be done. Timber scaling and estimating takes up a greater portion of the time, although there are a few special uses and Homesteads requiring attention every year. Forestry in the future on these two forests will progress in a very similar manner to which it has in the other parts of the country. In the immediate future more detailed timber reconnaissance and plans of management will be carried on and the lumbering industry will develop to a higher standard.

Many citizens cast criticisms on the Service and declare that it serves a nuisance in bottling up wealth, but as time passes and conditions change, the critic is taught the great responsibility resting on the inadequate force of managing the valuable resources with which we are entrusted.
Fish Cultivation

From prehistoric times men have looked upon the fishes which live in our waters as their legitimate prey. Similar to the conditions which have threatened our wild game with complete annihilation, fishing, particularly in our inland waters has degenerated from the quest for food to mere "sport." We have before commended real sport but we deplore any policy that disregards the future.

It is true that our streams and ponds have been stocked with artificially hatched fry but this work has always been conducted from the sportsman's viewpoint. An altogether novel yet broad conception of the problem of fish conservation is presented in this issue by the article, "Little Fishes in The Brook." Instead of dumping numberless fry indiscriminately into our streams and ponds without any regard for adaptability to environment we should consider it from the point of view of food production, the same as we look at the production of beef or pork. By cleaning out of these bodies of water the undesirable species of fish and then cultivating desirable species, feeding them if necessary, the neglected ponds and streams of our farms will become producers of a considerable amount of very desirable food.

This outlook opens up a large field of experimentation. This spring the College of Agriculture expects to start experiments along this line in the upper waters of Cascadilla Creek. We shall watch their progress with great interest. We offer enthusiastic cooperation.

During the past winter discussion of "Reciprocity with Canada" has been heard at all times and all places. The Cornell Countryman hesitates to take up a subject over which the opinion of the nation seems so widely scattered. However, the agricultural interests of the United States seem to be unanimously against this measure. The Countryman takes its stand with them.

We call the especial attention of our readers to the resolutions adopted by the National Grange concerning Canadian reciprocity, which are printed in the columns of our General Agricultural News.

Any measure which continues a tariff on manufactured articles while putting raw materials, the farm products, on the free list is manifestly unfair. Never until the present time has the farmer received prices anywhere near the value of his products. This reciprocity bill, if passed, will bring prices back again to the old unjust basis. At the same time the farmer must continue to pay high
prices for all manufactured products.

This proposed measure is not real reciprocity. We urge the American farmers to stand united and to make strong protest against its enactment.

We have recently received a copy of a brand new magazine, Phytopathology, which is to be the official organ of the American Phytopathological Society. This first issue contains forty pages and cover with additional frontispiece (an hitherto unpublished photograph of Anton de Bary, father of Plant Pathology), and presents altogether a very pleasing appearance.

An editorial announcement states, "This journal is designed primarily as a channel of publication for the phytopathological contributions of the members of the Society. Much of the space will naturally be occupied by the papers read at the Society's meetings. The editorial policy, however, will aim to make the journal more broadly representative than this and we hope to deserve and receive the subscriptions and support of all who are interested in the study of plant diseases."

One of the three editors of Phytopathology is Professor H. H. Whetzel, while the business manager is Professor Donald Reddick, both of our own Department of Plant Pathology. Thus, we have more than a passing interest in this new magazine which has its home at Cornell. Any organization that includes on its executive staff Professors Whetzel and Reddick is sure to advance. The Countryman predicts for Phytopathology a brilliant future.
In the Intercollege Carnival of Sports held in the Armory, Saturday, March 18, Agriculture won first place and with it a lead of six points for the Intercollege Championship. Those who won points for Agriculture were as follows: T. E. Milliman, first in obstacle race; S. A. Miller, third in rope climb; G. U. Tiffany and F. E. Rogers, second in the elephant race; G. U. Tiffany, first in the sack race; G. U. Tiffany and F. E. Rogers, second in the three-legged race, and T. E. Milliman, W. R. Wilson, F. J. Burgdorff, L. M. Hayes, L. C. Treman, C. E. Riker, E. V. Hardenburg, and R. T. Burdick, first in the intercollege relay race. In the rooster fight, two Agricultural teams, E. V. Hardenburg and H. G. Honeywell; and Isador Selecter and E. A. Stevens, stood after all others had fallen.

On Friday, the 17th, the Farmers’ Institute Workers of this state met here at the College. At one o’clock, Farmers’ Institute lecturers, and representatives of the State Education Department, members of the College faculty and several of the Geneva Experiment Station staff, who have assisted in institute work, sat down to a dinner prepared by our Home Economics Department.

Following the dinner were some very interesting toasts. Mr. Jared Van Wagener, Jr., Institute Conductor of Lawyersville, N. Y., presiding as toastmaster. The first speaker of the afternoon, Hon. R. A. Pearson, N. Y. State Commissioner of Agriculture, discussed the “New Policies of Institute Work in New York State.” Other speakers who followed were: Dean Bailey, Dr. W. H. Jordan, Director Geneva Experiment Station; Hon. D. P. Witter, Institute Conductor of Berkshire, N. Y.; Miss Bella Millar, Institute lecturer; Mr. A. J. Merrill, N. Y. State Education Department; Mr. F. G. Helyar, Director of the School of Agriculture at Morrisville, N. Y.; Prof. James E. Rice, of our Poultry Department; Miss Martha Van Rensselaer of the Home Economics Department; and Mr. Royal Gilkey, Assistant N. Y. State Department of Agriculture.

The purpose of this meeting was to enable those connected with Institute work to get together so as to discuss future policies of the work, and also, that the various workers might become better acquainted with one another. A similar meeting is held each year at the close of the winters’ institute work.

Prof. Gilbert spoke at the following Farmers’ Institutes during March: Berkshire, N. Y., March 14; Claverack, N. Y., March 9; Elmira, N. Y., March 11; Alfred, N. Y., March 2.

Dr. Webber was a speaker at Farmers’ Week of Massachusetts Agricultural College, March 14.

A corn growing contest has been instituted among the boys of Elmira and vicinity. This contest will be under the general direction of Dr.
Gilbert. Four lectures on corn growing have been arranged and a corn show will be held at the Chemung County Fair when prizes will be awarded. These prizes consist of free trips to Cornell, the Experiment Station at Geneva and to Albany.

A corn germination contest has been arranged among the school children at Berkshire, Tioga County, by Dr. Gilbert. A prize will be given to the boy or girl who writes the best essay upon his results.

During the week of March 20th, members of the Department of Entomology visited Batavia, N. Y., where they decided upon the location of the experimental orchards for the Batavia Bethany Fellowship in Entomology. This fellowship was established by Mr. R. W. Braucher.

The Department of Entomology has received power sprayers from the Hardy Mfg. Co., of Hardy, Mich., and from the Friend Mfg. Co. These outfits are to be used in spraying the elms on the campus for the elm leaf beetle, which has been a serious pest for the past few years.

The Campus Club held its regular meeting on March 16, as guests of the Department of Home Economics.

On March 17, the Institute Workers on the State held their meeting at the college. They were entertained by the Department of Home Economics.

The Clinton County Extension School, the second of the kind run by the college, was held in March at three different places in Clinton County. At West Chazy from March 13th to 18th, Professor Stone, Mr. Cross and Mr. Ayres were present. On the next week the session was held at Saranac. Professors Stone and Harper, and Mr. Ayres attended this week's session. On the third week the session was held at Peru, and was attended by Professors Wing, Stocking and Stone. The studies were carried on by means of lectures and laboratory periods.

On the evening of Wednesday, March 15th, the Freshman Class in Agriculture held a well attended meeting in the Auditorium. Mr. C. F. Ribbsam told about the success of the Honor System and urged everyone to sign the articles. Dr. Needham then gave a very interesting and amusing talk on “Beast Tales.” After the program all present stayed to an informal fudge party.

E. A. Stevens has been appointed coach of the intercollege crews. He will take charge of the crews as soon as they get on the water. Until then he is working with Coach Hadley.

C. E. Ladd, '12, has been appointed assistant in the Department of Soils.

Mr. E. W. Thurston has just gone to West Hebron to teach Agriculture in the high school. He has what is said to be the largest class in high school agriculture in the state.

Mr. L. J. Cross of the Chemistry Department, attended the extension school at West Chazy, Clinton Co., during the week of March 13-18.

Prof. G. W. Cavanaugh spoke at a farmers' meeting at Canada, March 8, and at the Farmers’ Institute School at Albion, Orleans Co., on March 11.

The Poultry Association met Wednesday, March 15th, and elected the following officers for next year: President, L. M. Hayes; vice-president, W. W. Coddington; secretary-treasurer, G. H. Masland; assistant secretary-treasurer, G. H. Pound; first director, R. F. Leadon; second director, H. A. Clarke.

The Department of Farm Management has arranged with several farmers to help keep their cost accounts in return for which the Department will have the average expenses from farms.
A. L. Thompson, '11, has been appointed an instructor in Farm Management.

A very valuable bulletin is soon to be issued by the Farm Mechanics Department. Its subject is Knots, Hitches, and Splices. It will contain about 125 pictures illustrating all the knots that are of any use to the farmer. It represents a year's work on this subject.

The Farm Mechanics laboratory is becoming too small to accommodate the many students who are taking courses in the Department.

The Agricultural Musical Clubs held a very enjoyable smoker in Barnes Hall, Friday evening, March 17. Long stemmed clay stunt pipes, attractively decorated with green in honor of St. Patrick's day, were presented to the musicians. At the smoker, H. B. Rogers was re-elected president for the coming year and A. F. Barss was elected vice-president. Edward M. Tuttle and H. B. Rogers addressed the company, outlining the status of the clubs. The remainder of the program consisted of the following:


Dr. Lyon of the Department of Soil Technology is in receipt of a letter from Dr. Squires of the New Mexico Agricultural College saying that he intends to be in Ithaca at Commencement time. Dr. Squires graduated from Cornell in 1909.

In the February and March issues of the Journal of Franklin Institute, there appears an article on "The Relations of Certain Plants to the Nitrate Content of Soils" by Drs. Lyon and Bizzell.

Last Friday, March 10th, Dr. Lipman of the N. J. Experiment Station spoke before the Cornell Section of the American Society of Agronomy.

Prof. W. J. Spillman who is head of the Office of Farm Management at Washington, D. C., visited the College on Saturday, March 11th.


The dwarf orchard of the Department of Pomology will be moved to their main orchard grounds owing to the recent exchange of land between the College and the Athletic Management.

Mr. H. L. Ayres of the Dairy Department has been ill recently.

GENERAL AGRICULTURAL NEWS

Farmers' Week at the Alfred, N. Y., School of Agriculture—During the last two days of February and the first two days of March there was held at Alfred, N. Y., a 4-day farmers' institute. The State Department of Agriculture, co-operating with the State School of Agriculture, gave an extended and unusually complete Country Life program. Technical lectures were given during the day and general and educational lectures in the evening.
To the men were delivered 28 lectures and demonstrations, and to the women eleven. Eight evening lectures were given in the overflowing opera house. Prominent speakers from afield addressed the meetings. The following connected with neither School nor State Department of Agriculture deserve special mention as indicative of the grade and range of the work: Dr. Boothé C. Davis, Mr. Charles M. Day, Prof. Arthur P. Dean, Dr. Arthur W. Gilbert, Prof. F. W. Howe, Prof. M. W. Harper, Prof. C. L. Mosher, Prof. James E. Rice, Mr. George E. Smith, Prof. H. H. Wing, and Mrs. Helen Binkerd Young.

The topics that received special attention were, the Soil, Dairy, Poultry, Horses, Sheep and Orchard. In many local institutes these topics had been treated in one or two lectures, whereas at this "round-up" institute these topics were given four, and some even eight and ten lectures. This practical and extensive treatment specially appeals to the farmers who can get away from their farms for the meetings. The interest was keen, the attention was steady, and increased through the four days. The registration is significant of the growing appreciation, in this section, of the Institute School. (The first school at Alfred was held in 1909). Registration, 656 in 1909, 917 in 1910, and 1130 in 1911. Even more striking than these figures for the whole institute is the growth of the women's section, 60 in 1909, 160 in 1910, and 254 in 1911.

Workers Ready for all who Need them —Although we hear every day of the country's unequalled prosperity, the Free Labor Bureau of the Bowery Mission, 227 Bowery New York, reports that there are now in the city more idle men than ever before, many able, honest men, qualified for any sort of farm work, laborers of every description, skilled workers, and others, all wanting work yet finding none to do.

The Mission's Labor Bureau exacts no fees whatever and welcomes communications from anyone in need of capable men for any kind of work. Its share in relieving the condition of New York's unemployed has been very large and the Manager of the Bureau, Mr. J. T. Hunt, to whom letters should be addressed, is constantly hearing from employers, expressing gratitude for the men supplied and their proven worth.

* * *

Below is printed a copy of the resolutions concerning Canadian reciprocity presented to the Senate of the United States by the National Grange:

Approved:
NAHUM J. BACHELDER,
T. C. ATKESON,
AARON JONES,

To The Hon. Senate of the U. S.,
Washington, D. C.

We, the undersigned farmers, respectfully urge that the Canadian Reciprocity bill now pending in Congress should not become law for the following reasons:

1. The bill provides for the admission free of duty of all Canadian farm products. Since Canada is the only country from which any considerable quantity of these products can under any circumstances be imported, this would result in practically free trade in everything the farmer produces.

2. While putting farm products on the free list the reciprocity bill makes no material reduction in the high tariff rates on all the manufactured articles the farmer buys, and therefore gives no relief from the heavy burden of taxation imposed by these duties.

3. The theory on which our protective policy has always been defended is that all classes and interests are equally entitled to protection. The farmers, however, receive much less protection than the manufacturers, for while farm products are taxed on the average about 25 per cent., manufactured articles are taxed on an average about 45 per cent.

4. The enactment of the Canadian reciprocity bill would still further dis-
criminate against the farmers, by abolishing the comparatively slight protection now given them, while leaving the high protective duties on manufactures practically untouched.

5. The Canadian farmers, by reason of their lower general tariff, and their preferential trade arrangements, can buy manufactured goods at lower prices than those prevailing in this country. The prices of farm lands in Canada are also much lower than in the United States. These conditions give the Canadian farmers an advantage over us, and the free admission of their products will subject us to unfair competition.

6. We hold that the farmers should receive exactly the same measure of protection as is given the manufacturers, and that there must be no reduction of duties on farm products, either by reciprocity or tariff revision, unless the duties on all manufactured articles are at the same time correspondingly reduced.

7. To show that this reciprocity measure is not an honest effort to reduce the cost of living in the interest of the consumer it is sufficient to point out that, while wheat is on the free list, flour is taxed 50 cents per barrel, and that while cattle, sheep, and hogs are free, meats, both fresh and cured, are taxed 1½ cents per pound for the benefit of the Meat Trust.

As the adoption of the proposed reciprocity law would be a serious injury to the farming interests of this country, and would greatly reduce the value of our farm lands while increasing the value of Canadian farms, we earnestly protest against its enactment.

National Dairy Show Meeting—The annual meeting of the stockholders of the National Dairy Show Association was held in Chicago, Wednesday, March 1st. A report of the past year's work was made by the manager, Prof. H. E. Van Norman. After that, nine directors were elected and they are as follows: J. D. Nichols, Ohio; H. E. Van Norman, Pennsylvania; Wm. Hill, Illinois; R. B. Swift, Illinois; A. J. Glover, Wisconsin; John Irwin, Minnesota; Charles Hill, Wisconsin and F. J. McNish, Illinois. The holdover members of the board of directors are: E. K. Slater, J. A. Walker and W. B. Barney. The purpose and object of increasing the board of directors was to give opportunity to have all branches of the dairy industry represented on the board and to enlist the services of more people.

At the meeting of the board of directors, which followed the stockholders' meeting, H. E. Van Norman was elected president, John D. Nichols, vice-president; Wm. Hill, secretary; and J. A. Walker, treasurer. A committee of three consisting of J. A. Walker, F. J. McNish and Wm. Hill was elected to perfect the organization. A meeting of the board of directors will be held April 7th for the purpose of receiving bids from different cities for the annual meeting of the National Dairy Show Association, arranging dates of show and selecting a manager.

* * *

Fruit growers and all who are striving to protect their fruit and vegetables against their enemies need a copy of the new and handsomely illustrated catalog just issued by the Goulds Mfg. Co., of Seneca Falls, N. Y. It contains full directions how to spray various fruits and berries, what spray to use for the numerous diseases of each, and how to mix the right spray solutions to effectively combat these diseases.

This new catalog shows the “Monarch” and “Emperor” types of Goulds sprayers fitted with horizontal instead of the usual vertical air-chamber. This reduces the height of the pumps materially, makes them more compact, easier to pass under trees, and altogether much more convenient to handle.

Another new feature that will be greatly appreciated is the devoting of two pages to the illustration and description of Spray Pump Parts.
FORMER STUDENTS

Sp. '99-'03—Francis H. Richards of North Bennington, Vermont, was born at Enfield, Massachusetts, and was brought up as a farm boy attending the schools of that town. He entered Cornell in September, 1899. After two years of college work he went abroad as a salesman where he remained a year returning in the fall of 1902 to finish his course making a specialty of animal husbandry and dairying. After leaving Cornell in 1903, he began work as a salesman for a dairy supply company.

The following spring he resigned and took a position as superintendent of a large dairy farm near New York City with one hundred cows where certified milk was produced that sold in New York City for 15 cts. per quart. After staying on this farm for a year the position as superintendent of the state farm at the Danvers Insane Hospital was offered him which he accepted. This farm contained several hundred acres most of it being in grass and under cultivation. Over one hundred men were employed. The stock consisted of about 200 head of cattle, 500 hogs and 3000 poultry. There were 17 acres in gardens which supplied vegetables for the hospital containing 1600 people. A continual supply of soil crops including alfalfa was fed to 130 dairy cows during the summer months and 800 tons of silage and 425 tons of hay were harvested the last year Mr. Richards was superintendent. Besides these extensive farm operations several acres of land were cleared each year. A large amount of stone road was built. One cattle and hay barn was built and one large barn was remodelled inside. Mr. Richards installed the first and largest Burrell-Lawrence-Kennedy milking machine outfit in New England. Was the first to use an electric motor with hoist to lift large loads of hay into the mows, lifting a whole load at once. Some days as many as 30 or 40 tons being unloaded in a few hours. While at the state farm, Mr. Richards had charge of some of the earliest experiments in the United States with Von Behring's bovo-vaccine test which is designed to protect animals from tubercular infection.

In the spring of 1907, Mr. Richards resigned his position at the state farm as his father had died the fall before leaving the home farm to be cared for. That year he settled up his father's estate and sold the farm in the spring of 1908. After selling out he accepted a position as superintendent of the Carver Hill Farms at Natick, Massachusetts, owned by Mr. W. S. Patten of Boston. Here the process of building and improving began. Barns were moved and new buildings put up until a fine set of up-to-date farm and dairy barns with modern boarding house for help took the place of the old ones. Here many practical and original ideas were worked out in barn construction. All of these buildings were designed and the work personally superintended by Mr. Richards.

In June, 1909, Mr. Richards resigned and accepted a position at the Fair-
view Farms at North Bennington, Vermont, the summer home of Mr. F. B. Jennings of New York. This estate is one of the finest in New England and is beautifully located. Since coming here Mr. Richards has made many changes and improvements; among them is a large brooder plant and incubator house, the beginning of a fine poultry plant. Mr. Richards is aiming to make each department of this farm a paying business by itself.

'95, B. S. A.—George Harold Powell has resigned as acting chief of the Bureau of Plant Industry, United States Department of Agriculture, and has taken the position of secretary and manager of the Citrus Protective League of California, with offices in Los Angeles.

'01, W. A.—Harry Winters has been appointed farm inspector in the N. Y. State Department of Agriculture. His duties consist in part in the inspection of farms connected with state institutions.

'05, W. P.—Gustave Walters is in charge of the poultry division of the Johnson Stock Farm at Marion, N. D., where he has erected two poultry houses each over 600 feet long. Mr. Walters plans to raise 30,000 chickens this year.

'06, B. S. A.—John A. Barron has been appointed Agriculturist for the Delaware Lackawanna & Western R. R. His headquarters are in the Chamber of Commerce Bldg., Binghamton, N. Y.

'07, B. S. A.—Gordon D. Cooper has returned to his home in Boston from the South. He superintended the planting of seven carloads of trees and shrubs at Corey, Ala., the new industrial town in the Birmingham district, where the United States Steel Corporation is putting nine million dollars into new steel plants.

'07, B. S. A.—H. F. Prince has returned to his fruit ranch, R. F. D. 2, Grand Junction, Col.

'08, B. S. A.—R. A. Wooglan is now travelling through India, Africa, and other tropical countries, on a special commission for the United States Bureau of Entomology, attempting to discover parasites of the white fly, which is so injurious to citrus crops. He was last reported from Java.

'08, Sp.—W. O. Tiffany recently sent into the Poultry Department an interesting curiosity. It consisted of a large hen’s egg, eight inches in circumference, inside of which was another perfectly formed medium-sized egg. Inside this second egg was a still smaller third egg. All three eggs had well developed shells.

'08 Sp.—Walter G. DePew is engaged in dairy farming at his home near Canandaigua, and is producing sanitary milk at a very low cost. Mr. DePew has a fine herd of Guernseys, some of which are imported.

'09, B. S. A.—The Yesterlaid Egg Farm Co., has recently published a very complete and original booklet describing in detail the egg industry of this company. It is remarkable how well regulated and systematic the business is conducted. Due to this, the company is meeting with well earned success. R. C. Lawry is manager of the company.

'10, B. S. A.—J. H. Rutherford is now managing a 360 acre farm, owned by Ernest O. Koser, Somerset, Pa. Being near Ithaca early in March, he visited the College for a few days. His address is R. F. D. 6, Somerset, Pa.

'10, B. S. A.—Mr. B. D. Lamphear was married on March 1st, to Miss Mabelle Wallace Kresge at Newfield, N. Y. Mr. and Mrs. Lamphear will live in Rome, N. Y., after May 1st.

'10 B. S. A.—George Becker is now assistant entomologist at the University of Arkansas.

'11, W. P.—Mr. Wright, who was president of the Winter Course Poultry Club, has purchased a fine fruit and poultry farm near Rochester, N. Y.
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The Eddy design has been copied, but other plow-makers have never succeeded in equalling the Eddy process of tempering. The Eddy Steel Plow stands in a class by itself when it comes to wearing qualities. Every piece of steel that touches the soil is tempered with scrupulous care by painstaking, skilled workmen after years of careful training. No other plows resist the wear and cleaning like the Eddy. All Eddy Plows are constructed along simple, strong lines and made right through and through. That's why they give longer and more dependable service under all conditions.

The Most Popular General-Purpose Plow is
THE EDDY No. 25D STEEL PLOW

THE NOS. 25D, 26D AND 25D-16 PLOWS

No plow equals this model for all-around work—it is popular everywhere. No other plow is so easily handled. It is built on graceful lines and is light of draft. Mouldboards are of highest grade soft-center steel, tempered by the Eddy process. Open-hearth steel beam; steel landside with chilled shoe.

The 25D is equipped with either soft-center or open-hearth mouldboard; the 26D with chilled mouldboard; the 25D-16 with soft center steel mouldboard only. The 25D-16 is a large two-horse or medium three-horse plow. These plows can be equipped with jointer and wheel, as shown in illustration, or with straight or rolling coulter if desired.

<table>
<thead>
<tr>
<th>Number</th>
<th>Capacity</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>25D Steel Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
</tr>
<tr>
<td>26D Chilled Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
</tr>
<tr>
<td>25D-16 Steel Mouldboard</td>
<td>8 x 16</td>
<td>115 lbs.</td>
</tr>
</tbody>
</table>

These are only three of the big Eddy line of popular plows, which includes the Eddy Sulky Plow. Write today for catalog. It is free and will surely interest everyone desirous of owning the very best in plowdom.

W. EDDY PLOW CO.
GREENWICH, N. Y.

In writing to advertisers please mention THE CORNELL COUNTRYMAN
The car whose engine is destined to revolutionize the industry
The HIGH DUTY ENGINE used in all ELMORE models for 1911, is the
most simple and powerful gas engine in the world. It fulfills the prophecy of
eminent engineers in its signal two-cycle perfection.
Send for catalogue.
Desirable representation wanted in unclosed territory.

I. R. GARDINIER, Central New York Distributor
Office, 70 Genesee St. Garage, 119 Kemble St. UTICA, N. Y.

New York State Farms

FOR SALE

100 desirable properties, near cities, villages, railroads, creameries and good schools. Large farms. Small farms. From $10.00 an acre to any price you may want to pay. Location and conditions make the price.

New York State farms at one-half the price of Western farms; will pay 100 per cent. better. Good roads, rural delivery of mail, telephones, all advantages of the city all parts of the state.

A guarantee bond, warranty deed, full abstract of title with every deed.

I can sell your property. Send for catalogue of farms.

AGENTS WANTED

H. L. REED
Amsterdam, N. Y.
RIBSAM'S

It is not too late to write for our catalogue. Give our vegetable seeds a trial in your garden.
A reliable list of the most reliable seeds and all kinds of garden and farm supplies.
Send for one and look it over

MARTIN C. RIBSAM
Broad and Front Sts.  TRENTON, N. J.

Cornell Graduates are Flocking to the Kinderhook Country

THAT IS, TWO (after scouring the country for the very best place) have
settled here during the past year, one buying an orchard of 3,000 trees and the
other putting out a new orchard of over 4,000 trees this fall.
AND OTHER CORNELL MEN are coming even though they don't know
it. Maybe you are one. Send for our booklet and see.

RURAL LIFE COMPANY
KINDERHOOK, N. Y.

HIGH GRADE SEEDS...

Alfalfa, Clover
Timothy
Ensilage and Field Corn
Seed Oats
Barley
Spring Wheat
Spring Rye
Garden Seeds

Government Test

F. H. EBELING SEEDS

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Retail Store, 217 Warren St.
Warehouse, 538-540 Canal St.

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ROTHSCHILD BROS.

"Student Supplies" for rooms

Decorations and Necessaries
Carpets, Rugs, Bedding,
Sofa Pillows, Banners,
Desk furnishings, Lamps,
Steins, Curtains, Books,
Waste Paper Baskets

Men's Wear
Shirts, Collars, Cuffs, Ho-
siery, Underwear, Sweaters.

Rothschild Bros.

"The Store of the City"

In writing to advertisers please mention THE CORNELL COUNTRYMAN.
GENUINE THOMAS
PHOSPHATE POWDER

(GENERAL SLAG PHOSPHATE)

GROWS BIG RED APPLES AND OTHER FRUITS

Why let the fruits of Oregon and California monopolize our best markets when fruit of EQUALY FINE APPEARANCE AND FAR BETTER QUALITY can be RAISED RIGHT HERE if you FEED YOUR TREES AND FEED THEM PROPERLY?

During the past five years GENUINE THOMAS PHOSPHATE POWDER has proven its value. Used by the leading fruit growers it has given high color, superior quality, healthy foliage and increased yields. It has proven its positive action in encouraging and developing fruit buds. It has, in short, produced fruit that ships better, looks better, tastes better and pays better than fruit raised otherwise.

Mr. George A. Drew, of Connecticut, well known as a standard authority on fruit growing, writes us as follows:

"GENTLEMEN—I have used THOMAS PHOSPHATE POWDER (Basic Slag Phosphate) for four years past for the fertilization of fruits, more especially on apples and peaches. I have been reluctant to express an opinion on the merits of this material until I have used it long enough to be sure of its effects. I find that it has a very positive action in encouraging and improving the fruit buds, and an equally positive action in producing high color and excellent quality in both apples and peaches. The splendid crops of clover which we grow in our orchards we could not grow before we used Thomas Phosphate Powder, and we attribute these excellent crops of clover (which are valuable in furnishing nitrogen to the fruit), to the use of Thomas Phosphate Powder. The only material that we use in conjunction with Thomas Phosphate Powder is High Grade Sulphate of Potash.

(Signed) GEORGE A. DREW, CONN.

(At the great Fruit Show held at Boston, Mass., October 18 to 24, 1909, fruit grown on Thomas Phosphate Powder by Mr. Drew, took nine First Premiums, two Second Premiums, and four Third Premiums, including a Silver Cup and a Silver medal).

GENUINE THOMAS PHOSPHATE POWDER

(BASIC SLAG PHOSPHATE)

Is an Alkaline Phosphate of High Availability. The Average of Nine Analyses at the Massachusetts Experiment Station shows the following:

TOTAL PHOSPHORIC ACID, 17.73 per cent. AVAILABLE PHOSPHORIC ACID, 15.48 per cent. (By Wagner's Standard Method) See Bulletin 127, page 16.

THOMAS PHOSPHATE POWDER ALSO CONTAINS 35 to 50 per cent of EFFECTIVE LIME, 15 to 17 per cent. IRON and 3 to 6 per cent of MANGANESE.

All buyers should insist on having GENUINE THOMAS PHOSPHATE POWDER (BASIC SLAG PHOSPHATE)

BEARING ON THE TAGS THE ‘KEY AND TREE’ TRADE MARK.

By buying THOMAS PHOSPHATE POWDER bearing this Trade Mark you can be sure to get the Genuine Unadulterated Article.

(When writing for our booklet, “Up-to-date Fruit Growing,” please be sure to mention THE CORNELL COUNTRYMAN.)

THE COE-MORTIMER COMPANY,
SPECIAL IMPORTERS
Manufacturers of E. Frank Coe Fertilizers and Peruvian Brands.

(The Highest Grade Mixed Fertilizers on the Market.)

24-26 Stone Street,
NEW YORK CITY

(We distribute from New York, Boston, Mass., Baltimore, Md., Norfork, Va., Wilmingston, N. C., Savannah, Ga., and Charleston, S. C.)
Williams Brothers

ITHACA, NEW YORK

WELL DRILLING
MACHINERY AND
TOOLS

BUFFALO WAGON SCALES
Saves 10 Times Their Cost

By Giving You Absolutely
Accurate Weight

Dependable Scales built
to last and sold direct to
the user.

Full information for the
asking.

BUFFALO SCALE CO.
ESTABLISHED 1859
NEW YORK   BUFFALO, N. Y.   CHICAGO
POULTRY

Eggs from constitutionally strong stock for sale of the following varieties: White Leghorn, Barred Plymouth Rock, Rhode Island Red, Brown Leghorn, Silver Spangled Hamburgs, Toulouse Geese; Pekin, Rouen, Indian Runner and domesticated Wild Mallard Ducks.

DEPARTMENT OF POULTRY HUSBANDRY
New York State College of Agriculture
ITHACA, N. Y.

New York State College of Agriculture at Cornell University, the DEPARTMENT OF ANIMAL HUSBANDRY will dispose of its surplus live stock at PUBLIC SALE FRIDAY, FEBRUARY 24, 1911 during FARMERS' WEEK

The offering will consist of: HOLSTEIN, JERSEY and GUERNSEY bull calves from advanced registry dams and CHESIRE pigs, boars, young bred sows and sow pigs from prize winning stock. Catalogues ready February 1, 1911. Address H. H. WING, Ithaca, N. Y.

Have Your Laundry Done at THE STUDENT LAUNDRY AGENCY
422 EDDY ST. PHONES—BELL 676, ITHACA 630 Run by Students all the Year Round


Aphine
The Insecticide that kills plant Lice of every species.

$2.50 PER GALLON
$1.00 PER QUART

Get it from your seedsmen . . .

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APHINE MANUFACTURING CO.
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The Cornell University Brooder Gasoline Heater IS MADE BY TREMAN, KING & COMPANY, ITHACA, NEW YORK

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THE LEADING AMERICAN SEED
CATALOG FOR 1911.

"THE SILENT SALESMAN" of the World’s Largest Mail-Order Seed Trade tells the plain truth about the Best Seeds that can be grown—as proved at our famous FORDHOOK FARMS, the largest Trial Grounds in America. Handsomely bound with covers lithographed in nine colors it shows, with the six colored plates, Seventeen Choicest Vegetables and most Beautiful New Flowers.

It is a Safe Guide to success in the garden and should be consulted by everyone who plant seeds. It is mailed FREE to all who appreciate Quality in Seeds. Shall we mail You a copy? If so, kindly name this magazine and write TO-DAY!

W. ATLEE BURPEE & CO.
BURPEE BUILDINGS  PHILADELPHIA

CHR. HANSEN’S Danish Butter Color

The American Prize Winner and Color of Quality

is the kind that does not add taste or odor to the finished product. As Strong and Clear as the coal tar colors. Yet Purely vegetable and absolutely harmless.

The winners of First Prizes at nearly all the 1910 State Fairs and Conventions such as New York, Wisconsin, Oklahoma, North Dakota, California, Montana, Minnesota, Michigan, Indiana and Iowa State Fairs; Wisconsin Buttermakers’ Convention and National Dairy Show.

WERE USERS OF

CHR. HANSEN’S Danish Butter Color

Expert Buttermakers Believe in the Superior Quality of Chr. Hansen’s Danish Butter Color.

Chr. Hansen’s Danish Dairy Preparations Are the WORLD’S STANDARDS

RENNET EXTRACT, CHEESE COLOR, LACTIC FERMENT, RENNET, TABLETS and CHEESE COLOR TABLETS

CHR. HANSEN’S LABORATORY

Box 1095, LITTLE FALLS, N. Y.

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New York State Sewer Pipe Company

Cement, Clay, and Gypsum Products
in carload and less carload lots

Main Office, Eighth Floor, Insurance Building, ROCHESTER, N. Y.

Best Portland Cements
Vitrified and Salt Glazed Sewer Pipe
Fire Clay Flue Linings
Fire Brick and Chimney Pipe and Fire Clay
Vitrified Clay Building Blocks and Hollow Tile
Wall Plaster and Land Plaster also Hydrated Lime

Drain Tile-Hexagon

We particularly desire to call attention to our excellent FARM DRAIN TILE and solicit inquiries for prices and samples.

Samples will be sent free with each inquiry if desired and we prefer that each new customer receive our sample before placing an order.

We have a pamphlet entitled "HINTS ON FARM DRAINAGE" which will be sent free upon application.

P. O. Box 583, Rochester, N. Y.
JACOBSON
Self-Contained Engine

Powerful
Durable
Economical

With Automatic Draining Water Tank for all-around Farm Service.
Impossible to overheat. Absolutely Frost Proof.
Minimum amount water required.

JACOBSON MACHINE MFG. CO.
Write for Bulletin 32.
WARREN, PA.

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Fresh, Salt and Smoked Meats
Poultry and Game in Season

D. S. O'BRIEN

In writing to advertisers please mention The Cornell Countryman
Men who Live in the Open
Appreciate the Best in Nature.

Men who Wear the Quality Shop Clothes
Appreciate the Best in Tailoring.

E. B. BAXTER,
150 East State St., Ithaca, N. Y.

ONE PRICE TO ALL

Goulds Sprayers
Only thorough work with the best machinery will accomplish the best paying results from spraying.

You must spray if you would have perfect fruit, and it doesn’t pay to bother with a cheap outfit. It means no end of trouble and it’s too risky—you have too much at stake.

Goulds Sprayers have proved their superiority by years of service. We make the sprayer best suited to your conditions. It will last for years because all working parts are made of bronze to resist the action of chemicals. “You can depend on a Goulds” to work when ever and as long as you require.

Send for Our Booklet:
“How to Spray—When to Spray—What Sprayers to Use”

It discusses the matter thoroughly. It gives valuable spraying formulas and tells how and when to use them.

THE GOULDS MFG. CO., 16 W. Fall St., Seneca Falls, N.Y.
We make both Hand and Power Pumps for Every Service

In writing to advertisers please mention The Cornell Countryman

Men who Live in the Open
Appreciate the Best in Nature.

Men who Wear the Quality Shop Clothes
Appreciate the Best in Tailoring.

E. B. BAXTER,
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THE GOULDS MFG. CO., 16 W. Fall St., Seneca Falls, N.Y.
We make both Hand and Power Pumps for Every Service

In writing to advertisers please mention The Cornell Countryman
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Check here My first Season's Experience with the Honey-Bee. By "The Spectator" of the Outlook, New York. A ten-page leaflet detailing the experience of this well-known writer. You will read the leaflet through before you lay it down. Free.

Bees and Fruit. A pamphlet showing the importance of the honey-bee to the fruit-grower. Free.

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Gleanings in Bee Culture. A 64-page illustrated semi-monthly magazine, the leading exponent of bee culture in this country. Ten cents per issue, but to new subscribers we will furnish it six months for 25 cents.

This sheet may be used as an order sheet by proper checking on margin, your signature, and remittance if required.

THE A. I. ROOT COMPANY
Box 20, Medina, O.
Fruit Sprayed with Bowker’s “Pyrox” brings more money because it is free from injury by worms, scab, etc. Over 300 testimonials in our new catalogue show the great value of this preparation on all kinds of fruits and vegetables. Pyrox serves two purposes; it kills insects and prevents disease and blemish. It adheres to the foliage even through heavy rains, saving labor and cost of re-spraying. Perfectly safe. It is all ready to use by mixing with cold water. Every grower who seeks fruit and vegetables free from blemish needs “Pyrox,” the “one best spray.” It “Fills the barrel with the kind they used to put on Top.”

Send for new catalogue with photograph of sprayed and unsprayed fruit in original colors. Will convince the most skeptical. Say how many and what kind of fruit trees, or how many acres of potatoes you have to spray, and ask for special prices. We ship from Boston, Baltimore and Cincinnati.

BOWKER INSECTICIDE COMPANY,
43 CHATHAM ST., BOSTON, MASS.

Growers’ Special Price List

WIZARD BRAND MANURES.

<table>
<thead>
<tr>
<th></th>
<th>In Bags</th>
<th>Shredded</th>
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<tr>
<td></td>
<td>Sheep</td>
<td>Hog</td>
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<tr>
<td>100 lbs.</td>
<td>$ 1.50</td>
<td>$ 1.90</td>
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<tr>
<td>500 lbs.</td>
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F. O. B. Chicago, Ill.

<table>
<thead>
<tr>
<th></th>
<th>In Bags</th>
<th>Shredded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sheep</td>
<td>Hog</td>
</tr>
<tr>
<td>1,000 lbs.</td>
<td>$11.00</td>
<td>$11.00</td>
</tr>
<tr>
<td>2,000 lbs.</td>
<td>18.00</td>
<td>18.00</td>
</tr>
</tbody>
</table>

F. O. B. Buffalo, add 22c per Hd. lbs. freight. Always carried in stock.

Pure Bone Meal, 167 lb. bags, $2.00 per 100 lbs. $35.00 per ton.

INSECTICIDES—We Handle All Kinds

Nico-fume, Nicoticide, Tobakine, Tobacco Dust, Grape Dust, Slug Shot, Rose Leaf Extract, Lemon Oil, Arsenate of Lead, Apheine and Williams Plant Oil at regular market prices. Sprayers, $3.00 to $6.00 each

WM. F. KASTING CO., Buffalo, N. Y.

Q U I C K

Quick to open
Quick to close
Quick to please
Quick Shipments

Stanchions adapted to either wood or steel frames

STRONG SANITARY

BOWEN & QUICK, Mfrs.
AUBURN, N. Y.
The Kind of Greenhouse We Build

How under heavens can we tell you in this short space? Simply out of the question! What you can do, however, is go down and look at those last houses we put up for the college. Then you will see our Sectional Iron Frame and Pipe Frame Houses, which are our best types of construction. Incidentally you might ask Prof. Judson his opinion of Lord & Burnham constructions. Glad to send you information or catalogues.

LORD & BURNHAM CO.
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NEW YORK
St. James Bldg.

BOSTON
Tremont Bldg.

PHILADELPHIA
Heed Bldg.

CHICAGO
The Rookery
Selling Baggage and telling tales are very similar. Somebody can always go you one better.

Every retailer is just pop-gun certain sure that nobody on earth has better merchandise than he. But mighty few will like to have you match some other fellow’s goods with theirs. Comparisons are, often, odious.

Now I am so sure of my traveling goods that I want you to see others along side of mine. You’ll buy mine.

The baggage you want; at the price you want to pay.

W. J. REED, 149 E. State St.
The Cornell Countryman

Palmer's

FLOWERS

340,000 square feet of greenhouses,
Lancaster, N. Y.

Two Stores:
304 and 522 Main Street, Buffalo, N. Y.

Ithaca representative
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Ithaca Phone 872

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The Toggery Shops
Established 1888
Agents for Mark Cross
Leather goods
and gloves
For men and women
Shirts made to order
Hatter, Hosier, Glover
Cravatter
Maker of Shirts that fit

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On the Hill
404 Eddy St.
(2) Shops (1) Factory

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The World's Purest Water
And
Ginger Ale

For sale at
The Ithaca Hotel and Cafes

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Merchant Tailors

Up-to-date styles and work
Seneca and Aurora, next Lent's Music Store

Dealers in Watches and Fine Jewelry
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The L. J. Carpenter Tailor Shop

Sanitary Steam Presser

205 North Aurora Street
Cleaning, Pressing, Dyeing, Repairing, Etc.
Bell ' Phone 567   Ithaca 'Phone 420-x

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Established 1887
LARKIN BROS.
RETAILING, WHOLESALING AND JOBBING GROCERS
JOHN J. LARKIN, Proprietor and Manager
408 Eddy Street, Ithaca, N. Y.

Get your SPORTING GOODS at
T. A. KELLY’S
EDDY STREET

We offer High Grade Holsteins milking from 50 to 70 lbs. each daily and guaranteed to make 10,000 lbs. milk each in a year. Not “hot air” but proven facts. “The recollection of quality remains long after the price is forgotten.” Address

RIVER MEADOW FARMS
McLAURY BROS., Proprietors
PORTLANDVILLE, N. Y.

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AS AGREED ALL CLOTHES VACUUM CLEANED before they are pressed.

THE ONLY PLACE IN ITHACA

NORWOOD'S
411 East State Street :: Ithaca, N.Y.

THE FIRST NATIONAL BANK
Cornell Library Building
Capital, Surplus and Profits $350,000.00
Oldest National Bank Safe Deposit Boxes for Rent

PIANOS, MANDOLINS, GUITARS, BANJOS and VIOLINS
Rented or sold on Easy Payments. "Songs of Cornell." All the latest music; Strings and supplies for all instruments at lowest prices
LENT'S MUSIC STORE - 122 N. Aurora Street
Victor Talking Machines, Records, etc.

"If you get it from us it's right"

BUTTRICK & FRAWLEY
One Price Clothiers and Furnishers
Offer unusual advantages to students. Our Clothing is manufactured for us to conform to the requirements of the college man by the best makers in the country, and is sold at bottom prices. Same price to students and town people. Suits from $10 to $30. We make to measure at a saving of 30 per cent. to 50 per cent. over the exclusive tailor.

Hats, Gloves, Shirts, Sweaters, Hosiery, Underwear, Slickers in fact everything in furnishings in keeping with our high standard of Clothing.

"If not we make it right" 118 East State Street

In writing to advertisers please mention THE CORNELL COUNTRYMAN
THE TOMPKINS COUNTY NATIONAL BANK

135-137 E. State St.

Capital $100,000.

Surplus and Undivided Profits $150,000

Safe Deposit Boxes for Rent

THE FAMOUS

ITHACA HOTEL BARBER SHOP

is the place to get your Barbering done

F. H. ESCHENBURG

CAMPUS GATE INN

Give us a trial

We will do the rest

NORWOOD & HULL, Props.

White & Burdick Co.

The oldest and largest Drug Store in the City

Supplies for Agricultural Students

a Specialty

THE ONLY MODERN MACHINE EQUIPPED CLEANERS IN THE CITY.

STOP KICKING!

NEXT TIME

send your clothes to the

Modern Dry-Cleaning and Pressing Works

103 Dryden Rd.

Sweaters Made New

The Only Modern Machine Equipped Cleaners in the City.

W. F. FLETCHER CO.

In writing to advertisers please mention THE CORNELL COUNTRYMAN
Be on the Safe Side!

You needn't fear a visit from the Sealer of Weights and Measures if you use . . . .

Thatcher Milk Bottles

You won't give over-capacity either, because they are accurate!

Send for our free book. It tells exactly why Thatcher bottles add to your profits.

Thatcher Mfg. Co.
103 Market St. Elmira, N. Y.

It is up to you if you have not gotten complete control of the dread San Jose Scale.

We know that Pratt's "Scalecide"

will do it more effectively than Lime-Sulphur, for less money and less labor—five years of proofs.

Prices:—In barrels and half barrels, 50c. per gallon; 10 gallon cans, $2.00; 5 gallon cans, $3.25; 1 gallon cans, $1.00.

Send for booklet, "Orchard Insurance."

If you want cheap oils, our "Carboleine" at 30c. per gallon is the equal of anything else.


Alberger, The Caterer

Caters to Teas, Luncheons, Dances and Banquets

Menus Furnished on Request

Out-of-town Entertainments a Specialty

We manufacture Ice Cream and Frozen Delicacies of all kinds

Special Prices to Boarding Houses and Fraternities

Also a Fancy Bakery

523 E. State Street

Ithaca, N. Y.

In writing to advertisers please mention The Cornell Countryman.
The ordinary half-tone engraving may be good enough for the poultry man who handles cheap stock, but cheap cuts never were and never will be of the slightest use to the man who wishes to do a first-class business in high-grade poultry.

We wish to call the attention of the readers of the Cornell Countryman to the accompanying cut. We have earned the reputation we enjoy of putting the finishing touch of Quality on the half-tone plates we make. Quality cuts sell the goods. Correspondence solicited.

Christy Engraving Co.
611-618 Central Bldg.
Rochester, N. Y.

BOOK BINDERY
Start Right—Begin your File now by having your volume of The Countryman bound at
J. WILL TREE’S 113 N. Tioga St.
BARNEY SEAMON ... HEADQUARTERS FOR ...
High-Grade Clothes and Regal Shoes 146-148 E. STATE STREET
WE DO YOUR MENDING FREE
FOREST CITY LAUNDRY
E. M. MERRILL
PHONE 209 NORTH AURORA STREET

PETER SCUSA
Modern Shoe Repairing Have your old shoes made like new. $1
Best oak sole and heels, sewed . . Work Guaranteed
THE LEADER GASOLINE SPRAYER
WITH 3 1-2 HORSE POWER, 4-CYCLE ENGINE.

It supplies 10 nozzles at a pressure of 200 lbs. with safety valve blowing off, and this service can be increased without overtaxing the engine.

A complete spraying rig.

It will meet all your requirements.

It will refill the tank, saw wood, grind feed, run your repair shop, shell or clean your grain, run the cream separator or the churn, and is safe, simple and satisfactory.

We can furnish a Rotary Power Pump for filling the tank, to be run by a belt from the engine which will pump 25 gallons the minute.

The regular outfit includes the gasoline, pump feed, with tank in base of engine.

We make a full line of Barrel and Knap-sack Sprayers including the GARFIELD and EMPIRE KING.

NEW MODEL AROOSTOOK
SIX ROW HIGH PRESSURE POTATO SPRAYER, (Entirely Automatic.)

Tank holds 100 gallons, has double brass cylinder pump, all brass working parts, mechanical automatic agitator with automatic brushes for keeping strainers clean, stout wheels fifty inches in diameter.

This machine sprays forty acres of Potatoes, Cotton, Tobacco or Vegetables for a day's work and without waste of Liquid.

FIELD FORCE PUMP CO., ELMIRA, N. Y.
WHAT MAKES A CREAM SEPARATOR GOOD OR BAD?

It takes something besides cast iron, red paint and hot air to make a separator that will skim milk clean twice a day 365 days in the year for 15 or 20 years.

If some of the farmers who are thinking of buying a cream separator this season, and have been half persuaded by extravagant advertising to “save one-third the cost” by buying a machine of the “Just-as-good-as-the-DE LAVAL” or the “mail order” kind, could only listen to the experience of a few of the thousands of the users of such machines who have traded them in for DE LAVALS during the past year, they would be forcibly reminded of the old adage which runs “Save at the spout and waste at the bung-hole.”

Any competent separator mechanic with a knowledge of materials and high-class separator construction will tell you that the marvel is, not that “mail order” machines are sold so cheaply, but that they succeed in getting the price they do.

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(See page 305)
The Cornell Countryman

Vol. 8 MAY, 1911 No. 8

BRITISH SHEEP IN THEIR NATIVE HOMES

By C. S. Plumb
Professor of Animal Husbandry, Ohio State University

THERE are wide extremes in the conditions under which sheep are bred and developed in England and Scotland, but not in the policies of the British flockmasters. No matter whether on the high hills, the rolling uplands or the lowlands of the Midland counties, the flockmaster puts a premium on a fixed policy of breeding, which involves retaining the best ewes for the flock, headed by rams of distinctly high merit. The uniformity and general excellence of British flocks, is a revelation to the American student of sheep husbandry.

Associated with more or less travels about in England and Scotland among the flocks of the country, there remains sharply fixed in my memory, certain days and experiences that I would refer to here, as affording striking and widely different examples under which sheep are developed on the other side of the water.

On a beautiful day in June, I took train from Tweedmouth, to go back into the border country and see the Cheviot sheep on his native heath. The railway followed along through the valley of the turbulent Jed up to the old town of Jedburgh back among the hills, with the brawling stream cutting the town in two. The scenery the entire distance is very picturesque and old castles and ruins show this to be a most historic country. As one approaches Kelso, sheep grow more and more common, and increase in number up to Jedburgh where they become very abundant. The old town lies down in the valley, with high grassy hills on every side. From the hill tops above the town, in every direction one sees flocks of sheep. No locality is spared. Even the town park has a considerable flock grazing on the rich sward. It is a most unusual sight, flocks of sheep everywhere, the farms devoted to them. The Mayor of the town, Mr. Swords, took us about and with him we visited flocks near at hand, where he showed us cross bred Cheviots, such as the border country is famous for, the result of breeding Border Leicester rams on Cheviot draft ewes. A draft ewe in Great Britain, is usually an old or perhaps undesirable ewe, taken from the pure bred flock and sent to market or used for well defined cross-breeding for furnishing mutton. “Cheviot half breeds” as produced in the border country, are much in demand on account of their sweet, high-class, not over-fat mutton. On this trip, I saw a number of black sheep, one of which I was assured was a pure bred Cheviot ewe.

Back in the mountains, some 15 miles from Jedburgh, one finds himself in the very heart of the Cheviot country, a region composed of magnificent, grass covered hills, rising to a height of over 3000 feet, of which “The Cheviot” is the greatest elevation. One sees nothing here but
these beautiful, everlasting hills, and grass and sheep. There are no trees, excepting here and there about a farm-steading and along by the few stone walls. No fences are to be seen. Sheep wander aimlessly about, singly and in pairs, everywhere. The Cheviot lacks the flocking habit, and so each sheep drifts off by itself as an independent individual. It is a most unique sight to a Yankee.

Grass is the main food of the sheep in the Cheviots. Near the barns are some small fields of roots or oats or barley, grown for a few of the more favored animals for show or special feeding, but the main flock is entirely pasture fed the year through, unless in winter the snow gets too deep, when hay has to be fed in a limited way. Men count their sheep by thousands, and having but small barns, few of the sheep ever see any other covering than the canopy of heaven. Back in these hills are found John Elliott, Smith of Mowhaugh, George Douglass and the men who are making Cheviot history today. These men have beautiful homes with the conveniences of modern life, and their hospitality is of the sort that one must always appreciate and long for yet more.

On another occasion I took train from London and ran up to a little station not far from the great University town of Cambridge. My objective point was Babraham, the old home of the famous Jonas Webb, that great constructive breeder who did so much in the first half of the last century to make the Southdown sheep unsurpassed as a mutton producer. The Ellmans in South England in the Southdown hills had done much to give great fame to this breed, when Mr. Webb up near Cambridge took up the work where they left off. He retained all of the famous early maturing, superior fleshing quality of the breed, but at the same time bred into his flock more size and constitution and made the Southdown a better sheep. He began his work about 1821, and became one of the few really great constructive breeders of sheep in English history. He let his rams out for large sums of money, and his sheep were famous all over Great Britain and Europe. Though the flock was dispersed in 1862, Southdowns have been continuously bred there ever since. Babraham is a typical English estate of fine, slightly rolling pastures, a century or more old, dotted with
great oaks and elms. Mr. F. N. Webb, a grandson of Jonas, is manager of the estate, which belongs to C. Adeane, Esq., and here I saw what undoubtedly is the finest flock of Southdown or any other kind of sheep today in existence. No other flock compares with that of Babraham for prizes won at English shows, or for influence in the breeding of other flocks. As is done elsewhere in England, roots are extensively used, and in summer, besides pasturage, as fall comes on, the sheep are turned on sainfoin or rape, or in late fall and winter on turnips in the fields. Considerable grain is grown about Babraham, and while in the Cheviots cultivated fields are rare, here they are very common. The Southdowns are most carefully separated according to age and sex. The stud rams used in the flock are of the very choicest sort, both in conformation and breeding. They are not for sale at any price. After a time, some of their very best rams may be priced, when the estate has used them all that is desirable. Stock rams and ewes for sale, are kept by themselves, while the reserve ewes and lambs are in groups by themselves. I looked over a large flock of reserve ewe lambs, grazing on pasture, but was given to understand that nothing would be priced. The principle of retaining the best to keep up the flock standard, is not deviated from. A large flock in a near by field, however, presented excellent opportunity for a selection of breeding ewes at a very reasonable price. Mr. Webb is one of the prominent English gentlemen farmers, active in Southdown and dairy Shorthorn circles. His home is most hospitable, and as I sat at the table with Mr. Webb and his charming wife and delightful children, I felt that it was well worth while journeying thousands of miles to such a Southdown shrine.

The Cheviot and Southdown are not very big sheep, but down in the south country, in Oxfordshire and Hampshire, one finds the breeds of those names, big, lusty fellows, carrying all the size called for in the bigness so much demanded by American farmers who seek quantity as a first essential.

Faringdon, England, is a little, old fashioned town in Berkshire, yet in the Oxford country. The Crown Hotel is the best one in town, and it is unique among the many quaint old hotels of England. I doubt if any two floors in the place are on the same level, and the building rambles about like the crooked streets of the
old town. But George Adams, Esq., a real, typical English farmer lives here, and as a breeder of Oxford sheep he is well known on this side of the Atlantic. He is now about 60 years old, and no doubt as genial and hospitable, as he was ten years ago when he drove me over his 4,300 acres and showed his 1,800 head of breeding ewes. Not only is he a great breeder of sheep, but he is a great farmer, with 500 milking Short-horns and 60 Shire brood mares, and hundreds of acres of land under cultivation. It is a beautiful rolling country, and the river Thames lazily drifts near by here on its way to London. The region is fairly well wooded, and the pastures have abundant shade from oaks and elms. Wheat is very extensively grown, and also oats and barley. Mr. Adams grows large areas of mangolds for his sheep. During the late summer and fall, under the control of extensive hurdles, he keeps a large number of sheep on pasture crops of the rape and kale sort. While the stables on the place are fairly extensive, he cannot handle all his stock conveniently under roof on one farm. These big Oxford Downs are given plenty of grass in summer, and roots in winter but they are not fed much grain. They are kept under close restriction as to range. As I saw the sheep grazing behind the hurdles, I did not wonder that the people of the Mississippi Valley looked with favor on this big, heavy shearing sheep, that could consume corn to great advantage. The Oxford country reminds one of some of the less rugged parts of New York, not far from Ithaca. The beautiful shade trees in some ways reminded me of New England, but the town of Faringdon, Never! That mayhap, is as unchanged as it was when the Pilgrim Fathers landed. But George Adams, may his shadow never grow less, must also be placed in that galaxy of British flockmasters who are real souls of hospitality and who are not likely to be outshone in that respect, even by the men of Kentucky.
It would seem a shame to leave this subject without a word about the Shropshire and his home among the hills and valleys of Western England. Shrewsbury is the home center of the Shropshire, and here Alfred Mansell, Esq., holds forth as the Secretary of the English Shropshire Flock book, and as a prime promoter of this great rent-paying mutton breed. Shropshire is a country of richly grassed hills with many flocks grazing on the pastures or on the rape or roots. Beautiful pastures are here, and the breed that grazes upon them has no superior for present day popularity. The best breeders select their stock with much care, and retain them for home use. The choicest rams do not leave England. They are seen in the stud and at the Royal and other shows. The Shropshire is not in general a high priced sheep in England, and I attended a sale at Mr. Fenn's with Mr. Mansell, and the prices ruled very satisfactory. Many excellent sheep changed hands at around $30 to $50.

It is a rich experience, following in the pathway of the golden hoof, from up in the highlands, down into the lowlands, amid flocks widely different in character and inheritance, yet each with its significant lesson. For me, the greatest thing taught by my British cousin, is that of definiteness of purpose linked with high ideals in breeding. That is a lesson that we on this side, need to have presented to us from such various points of view that its significance and value may be thoroughly appreciated. Among the various ways that this lesson may be taught, none very naturally will be quite comparable with a trip of observation itself among these great British flocks, that have done and are now doing so much for those of America.

SWINE FEEDING

By William Dietrich
Assistant Professor of Swine Husbandry, University of Illinois

Swine feeding is somewhat comparable to the building of a brick house. In order to do this given amounts of different kinds of material is necessary. Thus it is in feeding. The animal body must be constructed, which requires various kinds of material and different amounts of each. Furthermore, after the body is once made it must be maintained. In the structure of the animal body various kinds of material are necessary as follows: mineral matter, protein, carbohydrate, fat, water and oxygen. In order then to feed the hog properly it is necessary to get into the structure the proper amounts of these different kinds of substances. But in the construction of the animal body it is somewhat different from the house inasmuch as the animal body does its own work and seems to be influenced in this to a considerable extent by previous generations. Thus, in order to feed a hog successfully it seems as if it is necessary that ancestors should be properly fed for several generations before it is born.

Mineral matter is supplied in varying quantities by different feeds and in different localities but many times ingredients of this nature are not present in large enough amounts. To supply whatever deficiency there may be it is suggested that pigs be given free access to such mineral substances as salt, charcoal, ground limestone, bone meal and hard wood ashes. If these are set into the pen in separate compartments of the trough the hogs can help themselves to whichever one or to all, as their needs demand. Perhaps some day somebody will have the ability, the time, the patience and the funds to work
out just how much of these various kinds of mineral matter hogs need under different conditions.

In regard to protein it has been shown that pigs have the ability to eat and digest considerably more than can be used by way of building this up into body tissue. This being true the pig is stunted when too much is fed so that it will not do as well thereafter. Considerable time has been spent at the Illinois Experiment Station to determine the amount of protein that will produce the best results. For market pigs during the growing period this ranges between .6 and .7 pound digestible crude protein per day, per hundred pounds live weight. For pigs that are being developed for breeding purposes the amount should be less. During the fattening period market pigs also can get along to better advantage with considerably less. On account of limited time and space full discussion of these matters can not be given but the reader is referred to the writer's publications.

Carbohydrate and fat although they serve the same purposes in the body after being digested and absorbed should each be fed in certain definite quantities to produce the best results. They are handled by different processes in digestion and absorption.

The amount of water that a pig requires for best and most economical development also resolves itself to the same basis as the other nutrients, viz., in order to get the best results pigs should be fed a certain definite quantity of water. This also varies as between market pigs and breeding pigs. Furthermore, in the cooler climates the pig ordinarily will not drink enough water in winter, consequently for good results they must be fed water along with the other feeds and probably the best way to do this is to feed it in the form of a slop so as to make it palatable and also to induce them to drink it. Then again, during the hot days of summer there is a possibility that pigs will drink too much water. This also has its harmful effects.

Oxygen is probably the most important constituent of the ration. To emphasize this fact it need only be mentioned that if the oxygen supply is cut off the animal will die in a very few minutes. It can get along without water for a few days and can maintain itself without dry feed for several weeks. Oxygen is necessary in many of the processes of metabolism and in order to insure a sufficient supply at all times, pigs, and especially growing pigs, should be given an abundance of exercise.

In order to summarize the question of swine feeding they should be born from ancestors that have been properly fed and handled and then be fed proper amounts of water, protein, mineral matter, carbohydrate and ether extract and be given an abundance of exercise. Then pigs will develop as they should and return profit to their owner.
RAIN WITHOUT CLOUDS

By R. R. Keely
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The writer was engaged in British Columbia in the summers of 1907 and 1908, in the development of irrigation systems. The shortage of water in some sections of that country led him to investigate the subject of loss of water. In his investigations he became associated with Mr. Clement Vacher, of Kelowna, B. C., a French prospector, farmer and scientist, who had given this subject considerable study. In taking up the study of economy of water in irrigation, we were led to an investigation of the methods in use.

In general, there are two methods which may be used for artificially watering growing crops.

(a) Water is carried over the land in open ditches or furrows between the rows of growing crops, or beside the rows of trees in an orchard.

(b) Sprinkling the water over the ground with a garden hose, or other similar methods, which, in general, are too slow and expensive to be of commercial value.

(1) In the first case, the waste of water is excessive, due to evaporation and seepage. The water is usually carried in open ditches where much of it evaporates or soaks away where it is not needed.

(2) Most crops yielding a high profit require good drainage and a rather sandy, or open soil. By exhaustive experiments in actual irrigation by the ditch method, we found that the conditions in general were as shown in Fig. 1, where the wetted soil is shown by the total shaded area, while only the top sixteen or eighteen inches is useful to the growing crops, as shown by Fig. 1. The shaded area below, or about 82 per cent. of the water is wasted.

(3) In orchard irrigation in a dry climate, the water must flow through the rows continuously for several hours or days. During this time the area of damp soil is exposed directly to the hot sun. The result is an enormous waste of water due to evaporation. The water fills the pores of the soil, keeping off the supply of oxygen which comes from the air.

(4) Since the water is in open channels, it must flow by gravity, requiring in many cases, expense in bringing the water to the highest point of the land, grading the land to get an even distribution of water and building elevated flumes to carry the water over depressions.

(5) There is considerable cost of labor in plowing open the furrows and in constant attention required in distributing the water during irrigation. The labor is required at busy seasons of the year when help is hard to get.

(6) The open flumes and ditches are subject to rapid deterioration, making necessary a large annual cost of maintenance.

(7) In open flumes the water becomes unfit for domestic use and, in general, it must be pumped into the building for such use.

Case (b) need not be considered here, as the rate of applying the water is too slow and the labor cost too high for practical application.

With the conditions as stated above, the problem has been to design a system which established a decided improvement. The conditions as shown in Fig. 1 were determined by experiment. A study of these results brought out the possibilities of improvement. With the system about to be described, an effort is made to imitate nature, that is, to sprinkle the water on the surface of the ground in a way similar to that of natural rain. To do this nozzles were designed so as to:

(a) Throw the water high into the air, allowing it to come down as rain or a fine mist.
(b) To project the water over a great distance, so as to cover as large an area as possible with each unit, thus reducing the amount of piping and the number of units.

(c) Even distribution of the water over the area irrigated.

With this system the water is brought to the point of use in pipes instead of in open ditches, as by the other method. This water is maintained under pressure and is sprinkled over the surface of the ground by means of nozzles.

The first step in the development is shown in Fig. 2, which consists of two nozzles mounted on a revolving head, similar to a lawn sprinkler, throwing water for a small distance and distributing it evenly over this area.

The second step was the development of a nozzle which would throw the water to an exceedingly great distance and properly distribute it over an annular ring at some distance from the center. With this nozzle it was found impracticable to irrigate the space near the unit, so with these two nozzles the third step was obvious, that is, to take one nozzle from Fig. 2, and one from Fig. 3, getting the result shown in Fig. 4. Each nozzle is adjustable so as to get any distribution of water desired for the area covered, and the distribution is entirely under the control of the operator.

The practical result is shown very nicely in Fig. 5, which is a photographic reproduction of one of the nozzles in operation in the famous Okanagan Fruit Growing Section of British Columbia. The photo shows, by comparison with familiar objects, how the water is thrown to a great distance and the beautiful way in which it is atomized and distributed,
falling to the ground gently in the form of fine drops or mist.

Water is supplied under pressure in pipes, usually laid beneath the surface of the ground. The source may be from city mains, from high ground or near-by mountains by gravity, or by gasoline or electric motor driven pump. It is found for small areas that from \( \frac{1}{2} \) to 1 Horse Power in engine and pump capacity will generally be required per acre, depending on the annual rain fall, the character of the crops and the nature of the soil. In this case, it would be necessary to use the pump only one-half the time, or less, during the dry season. By careful management and care in keeping the pump running continuously, a smaller size of pump may be sufficient when irrigating large areas.

The pipes may be of either wrought iron, ordinary cast iron water pipe, or wood stave pipe, as used extensively on the Pacific Coast. They are usually laid beneath the surface, out of the way of cultivation and beneath the action of the plow, where they are protected from rapid deterioration.

The size of pipe varies with the conditions. If it is a gravity system with plenty of pressure, the pipe can be small, but with a pumping plant the pipes should be fairly large so that the loss of head in friction will be small, for this friction loss represents power consumed.

The cost of the system may run as high as $50.00 to $100.00 per acre installed. In many cases the pressure can be supplied by gravity. Where gravity system is not available, the cost of pump must be added to the above.

One of the great points in favor of the system is the saving in water. It has been determined, in the three years in which this system has been in use, that from 60 to 80 per cent. of the water can be saved.

The labor problem is almost entirely eliminated, and when it is considered that there is great difficulty in getting good men in the busy season, this is an important point.

All pipes being laid under the surface of the ground, the field is free for cultivation and the cost of maintenance is practically eliminated, for it is well known that pipes properly laid under ground will last many years. In uneven ground, there is the difficulty with the ditch system in distributing the water evenly over the surface. If it does not have constant attention, it is liable to wash out portions of the field and growing crops, but with the sprinkling system, the water is put on like rain and there is no tendency to wash the surface of the ground. There is no leveling of the ground, for the water is sprinkled on evenly regardless of the character of the surface.

Any system that puts water on the surface until it becomes shiny will be found injurious, baking the land and causing it to become encrusted, sometimes pinching off the young growing plants. It also stops the flow of air and oxygen to the roots. When the land is packed, the moisture is drawn to the surface by capillary attraction and the evaporation by the sun's heat is rapid. Any system where the nozzle does not rotate, and the water flows continuously for a time, will thus pack the land and is objectionable.

One of the advantages of our system is that by the slow rotation, (requiring about one minute), the water has time to soak into the ground and the surface becomes filled with oxygen before another application comes. Then as another application comes, the oxygen is carried into the soil and roots. The water, in passing through the nozzles into the air, is thoroughly aerated and warmed and carries into the ground much oxygen. The value of these points cannot be over-estimated.

Under favorable conditions, one unit will irrigate an acre of ground, and in general, not more than four or six units will be required in any case. Then it is seen that the amount of piping is reduced to a minimum.
The strong points in connection with this sprinkling system are:

(1) Economy of water, every drop being put where it will do the most good, and in just the required quantity, eliminating seepage and reducing the evaporation. Sixty to eighty per cent. of water is saved.

(2) Economy of labor. It is only necessary to open a valve, turning on the unit when it is desired to irrigate, no matter whether the ground is level, hillside, or rolling.

(3) Minimum cost of maintenance. After the pipes are laid, they are good for many years.

(4) All pipes are under ground, thus leaving the surface free for cultivation.

(5) No leveling or grading of the surface is required as the water is as evenly distributed over uneven ground as over level.

(6) The water under pressure is suitable for domestic supply.

(7) In many cases a spraying solution can be put into the pumps, so as to spray the entire crop at a minimum cost.

(8) The ground is not packed, but is made mellow by the gentle fall of fine rain.

(9) Every plant gets the same amount of water.

(10) This system is the nearest to nature of any way of watering.

(11) No attention is required while irrigating and the attendant can do other work.

(12) There is no washing of the soil, as no streams of water run on the surface of the ground.

(13) The system is suited to any pressure, from 2 to 150 pounds per square inch.

In Fig. 8, we used longer arms with the revolving head so that a larger area per unit could be covered in proportion to the additional length of the arms.

The System has been in use in British Columbia and in France for the past three years and has given excellent results. For the dry sections of the Pacific Coast, and for irrigating truck gardens in the neighborhood of large cities, it is believed that the system will be of value.
SOME PRINCIPLES OF VETERINARY HYGIENE 
AND THEIR RELATION TO THE HEALTH 
OF SHEEP AND SWINE

By D. H. Udall

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Sheep and swine are governed by the same laws of health as other domestic animals and man. As in all animals a normal healthy condition and progressive development are controlled by external surroundings or environment. Unthriftiness, arrested development, or disease reach them from without. They are never the victims of their own vicious habits; their development and health are impaired or promoted in proportion to the ignorance or knowledge of their owners.

There are three groups of influences that exert a profound effect upon the development and health of animals; namely, atmospheric conditions, food, and parasitic infection by animal or plant organisms. Prolonged slight variations, or transient marked variations in any of these influences endanger the health of the individual. Normal progressive growth rests upon the support of certain definite, constant, and unchanging natural laws or conditions.

Pettenkofer, who recognized and described the effect upon animals of variations in atmospheric conditions, and who recognized the principles of scientific feeding, was the real “Father of Hygiene”.

Much importance is attached to this feature of hygiene because faulty atmospheric conditions are frequent causes of arrested development or disease without being recognized by the owner or expert adviser. From a standpoint of health the atmosphere must be considered with reference to its chemical composition, moisture, temperature, and light.

The atmosphere supplies oxygen to the animal and receives in return various gases that are more or less harmful when present in the air in excess. Similar gases also enter the air from decomposing animal secretions, such as manure and urine. In many pig pens the manure heap is the chief source of air contamination. Whether the animal is a sheep, a pig, or a man, the effect of such contamination on the development and health is the same. Natural laws are impartial. The first, and often the principal effect of such contamination, is to depress the spirits and lower the tone of the animal. In some cases it has been observed that such animals tend to fatten at the cost of production or growth. Air vitiation beyond a certain point, however, affects the appetite to such an extent that, not only is development arrested, but there is a loss of weight. The air of the typical pig pen is subject to more rapid vitiation than most places in which domestic animals are kept, the chief source of contamination being the manure heap. Animal excretions become sewage, and decomposing sewage can in no way promote physiological development. Since pigs excrete relatively more water in the form of urine than sheep, decomposition of the litter proceeds faster. Sheep excrete only about thirty per cent. of their moisture through the kidneys, swine about seventy per cent. From this it will be seen that pig pens require more litter and more frequent cleaning than do those of other domestic animals.

The moisture and temperature of the atmosphere have a marked effect on the comfort and health of animals. When the atmosphere is so saturated with vapor that it forms in drops on the walls the per cent of moisture is 100. With a temperature of 60 to 65 F. a moisture per cent. of 40 to 70 is desirable. When the temperature is below 60 degrees F. an increase in
The moisture of the air increases the loss of the body heat; when the temperature is above 60 degrees F. an increase in the moisture of the air retards heat radiation from the body. In the winter many stables have a moisture per cent of 90 to 100. Pig pens are very liable to be saturated with moisture owing to a moist diet, the high per cent. of moisture excreted in the form of urine, the tendency to keep pigs in manure cellars, and the custom of constructing pens with cement or other cold materials on the surfaces of which moisture is condensed. The hygienic effect of exposure to a cold, damp atmosphere is to increase the loss of body heat and thus cause chilling. The mucous membranes finally become congested, the resistance lowered, and this may finally lead to actual disease. Protracted exposure to such influences must at least restrict the development. Sheep are less liable to suffer from the ill effects of damp, cold stables because of the common custom of turning them out during the day. They are, however, no less susceptible to the ill effects of cold and moisture than other animals, especially when such atmosphere is combined with vitiated air. Foundations resting upon poorly drained soils are transmitters of moisture unless constructed so as to overcome this defect. Since both sheep and swine are frequently housed on ground or basement floors this source of dampness and cold is a very frequent cause of arrested development, and disease. Some of our most troublesome outbreaks of chronic pneumonia in pigs are considered by excellent authorities to be due to housing in pens that are not easily kept dry. A combination of high temperature and moisture is a frequent cause of heat-stroke in sheep and swine during transportation. Otherwise it is of slight hygienic importance. Dry atmosphere, either hot or cold, rarely impairs the comfort or health of domestic animals in this climate.

Pigs and sheep require as much light as do other domestic animals; a window space equal to one twelfth to one fifteenth of the floor space.

In the foregoing lines I have attempted to briefly mention those features of the atmosphere that have a direct bearing on the comfort and health of animals. In the following lines an attempt is made to indicate the methods by which sheep and swine in particular may enjoy the beneficial and essential parts of the atmosphere without being subject to those extremes which are so often the unrecognized but fundamental causes of failure and disappointment.

From a hygienic standpoint it is essential that the foundation and walls should be impermeable to water. Porous material absorbs water from below and from the sides; through capillary attraction dampness may spread to distant parts and become a constant source of moisture for an entire stable. Hard baked tile or cement, form efficient barriers against soil moisture. In addition a layer of tarred paper or one-third to one-half inch of asphalt may be placed in the foundation cement, while a layer of asphalt tar may be spread over the outside of the foundation wall.

In the construction of the walls above the foundation one must provide for the exclusion of moisture, and the retention of heat. They must, like the foundation, be impermeable to moisture from without, and in addition they must be warm and dry. External moisture is excluded by a covering of waterproof material. For ordinary construction this is most readily accomplished with paint. A wall that is a poor conductor of heat is easily warmed and kept warm. Moist stable air coming in contact with it will retain as vapor a relatively high per cent. of its moisture. Condensation of moisture, or "sweating" of the walls is restricted. Such a wall must be built of porous material like wood, or paper. The more compact materials
are warm in proportion to their porosity (soft sandstone, soft baked tile). An air space within the walls is generally believed to act as a non-conductor of heat and cold. According to the results of recent experiments, however, its efficiency has been overestimated. The same space occupied by a very porous material (dry sand, cork refuse) has a much greater heat-absorbing capacity. Exposed walls and partitions of massive tight construction, made of hard materials like stone, cement, or brick are a constant source of cold and dampness in winter.

Control of the air supply, the moisture, and the temperature of stables in which animals are kept is maintained by an artificial system of ventilation. The term natural ventilation applies to the exchange of atmospheric and stable air through the pores of the walls. When the walls are properly constructed this exchange is of no practical value. Artificial ventilation must provide for an abundance of fresh air; the intakes and exits must be so constructed that all the parts of the room are aerated; the system must be so controlled that it meets these requirements under all atmospheric conditions. Wide separation of the intakes and exits insures thorough aeration. A relatively large number of intakes and exits prevent drafts. We should not depend on open doors and windows for ventilation. The forces that maintain an exchange between the atmospheric, or pure air, are two: 1. The wind, and 2. Difference between the atmospheric temperature and the stable temperature. The air currents may be forced in a horizontal or vertical direction, giving a horizontal or vertical system of ventilation. The latter is often referred to as the "King System".

The horizontal system in its simplest form consists in open doors or windows on opposite sides of the stable or pen. A common and efficient form of the horizontal system consists of frames covered with muslin or cheesecloth. These usually occupy the window space. The advantages of this system are: cheapness, simplicity of construction and operation. The disadvantages are: the cloth must be frequently renewed, when filled with dirt or sleet it is not permeable to air. Its efficiency depends almost entirely on the wind, so that it is not very active on quiet days.

The vertical system is constructed of two sets of shafts. One or more exit shafts leading from the ceiling straight up through the roof and above the ridgepole. Another set of shafts passing up in the walls to convey air into the stable. The vertical exit shaft may begin six or eight inches below the ceiling, or it may be brought nearly to the floor (so-called "King System"). The supporters of the King system maintain, that since carbon dioxide is heavier than air it settles in the lower part of the stable and finds more ready exit through a shaft that opens near the floor. It is a well known principle of elementary chemistry that when two gases of unequal weight are brought together they form a mixture of uniform specific gravity. The currents of air normally present in all stables are sufficient to prevent the physical separation of gases according to the specific gravity of each.

Another claim for the lower opening is, that the cold air entering in the upper part of the stable gradually falls displacing the foul air of the lower strata, at the same time acquiring a moderate temperature. The same forces that prevent a separation of the gases of the air according to their weight, prevent any great demarcation along the lines of temperature. The general law, that warm air tends to rise, is another force that prevents the convenient accumulation of warm air around low openings of exits. When the fundamental principles of a vertical system are all observed this type of exit shaft is efficient. The
lifting power, however, must be greater than for a shaft opening into the upper layers of the stable air.

The diameter of the exit shaft must conform to its height; a shaft that projects far above the ceiling may have a greater diameter than one that projects only a short distance. In no case should the diameter be more than 14 inches, and it may be as small as 4 inches. Too great a diameter causes a draft in high winds, and is inactive when the air currents are slow. Large shafts are liable to create drafts; they are not so readily warmed, and for this reason have a tendency to drip water in cold weather. The best means of preventing drafts and at the same time have an active ventilation is to install a relatively large number of exits and intakes. One large exit two or three feet in diameter is entirely inadequate for usual conditions. This is one of the chief causes of failure with the vertical system. A diameter of about 16 square inches per 1000 pounds of animal should be provided.

The top of the shaft should be covered to keep out rain and snow, and the lower end should have a damper that can be closed at will. Wood is an excellent material for construction. Four smooth boards may be nailed together, or still better, construct it with a double layer of boards and heavy building paper between. This adds to the warmth of the shaft, thus preventing the formation of moisture and dripping during cold weather. Any turn in the direction of the shaft lowers its efficiency; it should have a vertical direction. A vertical system of ventilation also depends on a tight building. Open doors or windows, or openings in the ceiling prevent circulation through the artificial shafts.

Intakes 4 to 6 inches in diameter and 10 to 12 feet apart should be placed in the wall on all sides. The outer opening may be near the ground, the intake passing up in the wall and entering in an upward direction near the ceiling. When it is inconvenient to place the shaft in the wall it may be carried up on the inner or outer side. Like the exits, every intake should be provided with a damper that can be closed at will. In this way the air can be regulated according to atmospheric conditions. When the stable becomes too cold, or when the wind is high, some of the openings may be closed.

Floors for sheep and pig pens should be constructed of warm materials with an elevation of at least 10 inches above the ground surface. Since the fluid excretions of sheep are relatively slight and are uniformly distributed they require less bedding than do other animals. The floor may be covered with a six inch layer of dry sand for absorption of fluids that pass through the straw. Firmly packed clay is impermeable to moisture and may serve as a foundation for the sand. The sand should be removed with the manure. Cement floors, when protected with sand, are well adapted to sheep. They are too cold, however, for pigs unless one is able to take unusual precautions in regard to moisture and litter. The objectionable features of cement for pig pens may be avoided by adding a portable floor of wood to cover a part of the pen. This provides a sleeping floor free from the ill effects of cold. In some countries tile blocks or bricks are being substituted for cement. They are very durable, are not slippery when wet, and are much warmer than cement.

In sheep pens each animal should have a floor space of about 11 square feet. Small pens should have a height of about 11 feet. When 300 or more animals are kept together the height should be from 13 to 15 feet. Ten to eleven feet is the correct height for pig pens.

The proper temperature for sheep pens is 50° to 55°F., increased to 60° to 65° in lambing time. Swine need a temperature of 55° to 60°. Young pigs should be kept somewhat warmer (60° to 62°).
FOOD, CARE, AND MANAGEMENT OF THE BROOD SOW

By H. H. Wing
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NEARLY all farmers in the State of New York keep more or less hogs and many attempt to raise more pork than is required for family use. That the production of pork is not more profitable and is not more extensively carried on, is due, in great measure, to the difficulty that many have in securing large sized litters of pigs and in raising them successfully. This difficulty is more often due to carelessness and inattention than to any other one thing. Since there is always a good market for weanling pigs in the spring, it would seem as though the results likely to come from a little care and attention would be well worth while.

It is a common practice to keep one or two brood sows. These are bred to farrow, usually in late March or in April. Such pigs as are secured and survive are raised to furnish pork the following fall. The sow is often fattened up during the summer after the pigs are weaned and disposed of and one sow from the spring litter is saved to breed the next year. This sow, that fares pretty well while her mates are being fattened for pork, is usually kept by herself in a cold pen, after the rest are slaughtered, and depends for sustenance upon slops from the kitchen, supplemented by two or three ears of corn. She is often not well bedded, while her food, although it may perhaps be sufficient, is not well calculated to her needs. She becomes constipated and by the time she is ready to farrow, her whole system is more or less feverish. It is small wonder that when the pigs are dropped, they come small and weak and few in number, while the young sow is feverish, very easily excitable and often loses the greater part of the litter if she does not actually turn cannibal and eat the whole mess up.

The domestic hog does not mature until about three years of age. A young sow seldom farrows as many pigs at her first litter as she will at succeeding litters. When selected carefully, and well cared for, a sow will continue to produce regularly good sized litters twice a year, often until she is eight or nine years of age. Anyone who expects to raise one or more litters of pigs each spring and fall, should aim to secure such brood sows and it is not a difficult thing to do among any of the important improved breeds, and when such an animal is secured she is as valuable as a cow and should be kept as long as she breeds well and regularly even up to eight or nine years of age.

The brood sow should be selected first for prolificacy, second for suckling qualities and third for care in handling her litter. In respect to this last, she is readily susceptible to training.

In selecting sows that are likely to prove good breeders, from a litter of six or eight gilts one should start with twice as many pigs as he expects to develop into good brood sows so that, those that prove unprolific may be discarded after the first litter is dropped, as the matter of prolificacy can only be determined with certainty after one or two litters have been produced. The pig that is likely to develop into a good brood sow should have at least 12 well developed teats. She should be long of body and stand squarely upon straight limbs. The loins should be strong and full and the body deep, particularly through the heart. She should not be too sluggish, and on the other hand, she should not be easily excitable. If the brood sow is a little over long and rangy or a little coarse in bone, it will do no harm as she can be mated with a boar that has flesh producing
qualities somewhat more finely and fully developed.

A good brood sow should be grown rapidly from the time she is born until she is eight months of age and should then weigh from 200 to 250 pounds in good condition of flesh. If she drops her first litter when she is a year old, she should be bred at eight months and from that time should be carefully and judiciously fed.

Sufficient nutriment must be provided to keep the mother growing and to develop strong, vigorous pigs. The food, however, should not be too concentrated. It must have a large amount of protein and should have a nutritive ratio not wider than one to five and one-half. From available foods, quite a wide variety may be selected. When it is available, there is nothing better than an abundant supply of skimmed milk, supplemented with wheat middlings and perhaps a little corn meal. Use about one pound of the grain to seven or eight of the milk, giving the sow about what she will eat up clean.

When the skimmed milk is not available, mangels make a very good substitute for succulent food and the sow should be well bedded with clover or alfalfa hay of which she will eat all the finer portion.

Failing either milk or roots, silage may even be used to advantage. In case these more bulky foods are used, a slop should be made of equal parts of corn meal and wheat middlings, with perhaps 10 per cent oil meal, in addition to the roots, clover, or alfalfa hay. This will make an ideal ration, the object being to keep the animal in good condition of flesh and to avoid any tendency toward constipation and its accompanying feverish condition.

If one or two sows are kept by themselves, attention to gentleness will be well repaid. The feeder or attendant can well afford to go over into the pen with the sows and accustom them to his presence, rubbing them along the back and sides, and teaching them that they have nothing to fear from the presence of man. If this is done, when farrowing time comes, and the young pigs need attention, it will not disturb the sow to have a person enter the pen.

When the pigs are born, the mother may be left by herself so long as she remains quiet. Normal partuition in sows is accompanied by quite a long period of lethargy and normally the dam will remain lying down during the whole time of partuition and for several hours afterward, the little pigs finding their sustenance with little or no help if they are strong and vigorous. But it is necessary on the part of the attendant to see that the pigs do not stray away and become chilled. It is not well to have the sow get up to eat within 12 hours after farrowing and then she should have only a very thin slop and it should be warm if the weather is at all cold. As the pigs begin to grow and make demands upon the mother, the feed should be increased but it should not be made too rich and care should be exercised as to the use of very much corn meal. If the feed is too rich, the pigs will scour.

In cases where the sow has a tendency to over-lay the pigs, great help is found by nailing a strip of wood three or four inches wide along the sides of the pen about four inches from the floor. This gives the pigs a chance to escape from the mother if she should lie down with her back toward the partition and catch them under her.

A well selected and well trained brood sow should produce regularly twice a year not less than 8 good pigs in a litter. On this basis, if the pigs are worth $4.00 each in the spring and $2.00 each in the fall, at weaning time, the gross returns from such a sow would be $48.00, which approximates the gross returns from the average dairy cow in the State of New York. Could not several thousand good brood sows replace an equal number of poor cows to the advantage of the owners of both?
FORAGE CROPS FOR SWINE

By H. B. Harpending

Dundee, N. Y.

 WE of the East are realizing more and more that we have ideal conditions for the breeding and feeding of swine. Our winters are a bit long and cold; but, with a moderate outlay for comfortable buildings and shelters and the exercise of care that the animals get the right ration and sufficient exercise, they are not much of a hardship.

Precaution should be taken that brood sows do not lie in their nests too much during the winter months as this lack of exercise is the cause of small litters and weak pigs at birth.

The writer owns and is in personal charge of a herd of over five hundred registered Berkshires. Practically all of these are on range the year round. They occupy colony houses which cost about $15.00 each to build and have always proven most satisfactory.

In this latitude (Yates County, N. Y.) rye is about the only winter pasture; and, while there is very little actual food value in the forage from this crop during the winter, its succulence to brood sows heavy with pig is worth much. It induces them to get out about the fields instead of lying in the nests. A record of the avoirdupois added to the bunch of pigs allowed to harvest the matured grain, will convince the most sceptical that thereby the rye crop is more profitable than by harvesting and marketing the grain.

The ground is fitted for rye pasture in August. The grain should be drilled about two bushels to the acre and put in anywhere from August 20th to September 5th. It is better if the grain gets a pretty good start before freezing. The swine should be kept from the lot when the ground is very soft and of course they should be rung.

We utilize rye pasture during the winter for pigs of all ages but it is primarily intended for the brood sows. No matter how closely it is fed down, no harm will come to the crop and the sows will be found on the field looking for a green bite at all hours of the day and many times this winter, we have seen them out at nine and ten o'clock at night. Now, the benefit of this exercise alone to a herd of brood sows heavy with pig, can hardly be overestimated; moreover, the green rye in their ration answers about the same purpose as would roots.

At the customary time to sow clover seed in the spring, we seed the rye pastures with medium red clover, or medium and mammoth, about eight to ten quarts to the acre. If the lot is to be seeded to alfalfa eventually, it is a good plan to add to the clover a bit of alfalfa seed for the purpose of inoculation.

The rye can be pastured (except when the ground is too soft) until it commences to joint. At this stage, remove the pigs to grass or rape pastures until the rye is matured and the straw breaks, then turn the stock in to harvest the crop. It is better to start them gradually, an hour the first day, two hours the second, etc. After three or four days, they may run the field at will. The younger pigs will need a bit of milk or slop in addition.

Gilts, young boars or shoats require no grain in addition to rye pasture and mature animals will become too fat if they have constant access to the field. None of the rye will be wasted. The pigs are good gleaners.

We usually let the field remain in clover for a year, plowing and putting in rye again the following fall. If the field is not seeded to clover, it may be plowed about the middle of August and again sown to rye. Fields so cropped will be found to gain in fertility year by year. We have rye pastures that have been so used for years and they seem to get better and better each succeeding year.
We have always believed rye the most profitable pasture, except possibly alfalfa.

The principal danger with alfalfa is that it may be overstocked. It will not do to depend upon the animals to harvest the crop and expect to have much of a crop for long. Alfalfa should be pastured to about one-third or one-half its capacity and mowed and harvested regularly the same as though it were not being pastured.

A patch of sweet corn goes well with clover or alfalfa pasture. Commence feeding stalks and all as soon as the corn is in milk. Start moderately for a week or so. The danger lies in overfeeding. The corn may be cut and fed on the sod or the corn field may be hurled off and the corn hogged down. This latter practice is very popular in some sections and is profitable, but a continued wet spell may cause considerable waste and perhaps better results will be obtained by cutting the corn and throwing stalks and all to the hogs in their pasture.

Swine on pasture should be provided with salt and hard wood ashes at all times. See that the supply is constant and where all may have access to it. Swine pasturing in an orchard are apt to gnaw the bark unless supplied with salt.

Rape pasture is profitable and very satisfactory. It can be sown any time after the ground is fit in the spring up to July 15th. It is better to have two or more pieces of rape used in conjunction; and, when one is pastured down, turn in the other, until the first has leaved out again. Rape will furnish seed until December first. Freezing will not harm it, except the pigs should not be permitted to pasture on it while the rape is frozen. An excellent idea is to sow rape in the corn field, about three pounds to the acre, at the last cultivation. The labor is insignificant, it is a small job to broadcast it ahead of the cultivator, and the pasture is considerable after corn is harvested.

Orchard grass and blue grass also afford excellent pastures for swine. If these meadows are topdressed occasionally and harrowed each spring thoroughly both ways with a spike tooth harrow, the results will be surprising. We have pastured three such meadows with swine for some
years. We topdress them every other year, harrow them thoroughly as soon as the ground is dry in spring and about June 20th to July 1st, mow them, setting the machine knives as high as possible.

The swine should be rung to prevent rooting and should be kept off the sod when the ground is soft in the spring.

While oats and peas are frequently recommended as a pasture crop for swine, we have never found them profitable. The grazing season is too short and much of the pea vine is wasted by trampling. Some cut the vines and feed in adjoining yards; but the practice is not to be recommended. Alfalfa, rye and rape will make good. A far trial will usually induce a continuation of the practice and the result will be readily observed in economical gains and large litters of vigorous pigs at farrowing time.

LANDSCAPE ARCHITECTURE FROM THE STANDPOINT OF THE GRADUATE

By Elizabeth Leonard, '10

A YEAR ago I wrote a short article for the COUNTRYMAN from the standpoint of the undergraduate. I would now like to give my point of view as it is today after a year of office and field work, as a possible aid to those now taking the Rural Art Course. I do not mean to criticize the course as now laid out. However, it is generally admitted that no one has yet succeeded in taking all of the work recommended in the course of study. In the process of elimination let me suggest which electives should be preferred, and when chosen, which part of the work should be emphasized. Even when our time was apparently completely filled, it was possible to put special energy into some particular part of the work without neglecting the rest.

The work falls naturally into the heads of (1) design, (2) plant materials, (3) engineering and construction. Under design come the sub-divisions—rendering (pen and ink and water color) titles, lettering and architectural details. It has rightly been the first aim of the department to instil in our minds the broad principles of planning and design; how to grasp a problem and how to think it out, to consult books and get ideas and then to work them out. I confess to a tendency to fuss too long over the appearance of the work. It is all very well to turn out a nice looking plan but do not sacrifice ideas to appearance. After you get into an office facility in drafting will come with practise. Do not worry about the drawing if you only have ideas.

Watercolor is useful so much as it tends to develop a sense of color for combinations in flower arrangement, rendering in watercolor is not done as much as it was once. The tendency is to the use of pen and ink or at the most a mere suggestion of color. First, because the clients object to paying for showy plans and second because elaborate work seems to be “playing to the gallery”. Once or twice a year it may be your privilege to make some high class exhibition renderings—if no one else can do them better—but it is a talent easily dispensed with.

At least one good type of lettering should be thoroughly mastered—more if possible—a draughtsman is known by his lettering. It is a mistake to make too elaborate or conspicuous titles. The simpler the better. Each office has its own uniform type; also there is usually a card index system of numbering and cataloguing the plans.

It would be well to keep a notebook of architectural details—if only rough sketches with dimensions shown. Some firms buy their garden-
seats, sundials, fountains, terra cotta, etc., but original designs always give an individual touch to the work.

First and foremost learn design through and through. Later you will be too busy doing mechanical work to develop the creative faculty.

Plant materials falls into the subdivisions of botany, horticulture and the regular work laid out in the course. Although necessary as a foundation, the elementary morphology and plant physiology is not directly useful. The same may be said of some of the advanced courses in identification, unless one is fortunate enough as I was, to be allowed to roam at will regardless of the work planned in the course, and to identify horticultural varieties likely to be needed later. The tree courses in identification are useful—the structure of the different woods—is not of much value. The most conspicuous native shrubs and plants should be learned but it is a mistake to delve deeply into the remote species of such things as grasses or compositae.

Almost the first thing demanded of me was the ability to make herbaceous borders and to plant formal flower gardens. This branch of the work is extremely important. The clients, especially the women, take an immense interest in the flower garden and usually insist on discussing it in detail with you.

In England the garden designer is first a horticulturist, then an architect. There is a tendency in America to neglect the horticultural side for the architectural. It is necessary to know how to grow plants; under what conditions and in what soil they will thrive; how late in the fall or spring they can be planted; which things to protect in winter; whether certain things should be planted in the spring or fall; which flowers are best or cheapest raised from the seed or roots; the season of bloom; how far apart and how deep to plant and whether in sun or shade. These are some of the horticultural problems that confront us.

Not only ornamental trees, shrubs and flowers but fruits and vegetables should be learned as well.

Your knowledge of Plant Pathology and Economic Entomology comes into play when the State Inspector comes around and reprimands you none too gently for planting "scaley" apple trees—or if the brown tail moth—the entire shipment must be burned.

Engineering and construction. The ability to make an accurate boundary survey, locating all grades, trees and buildings is not an essential. In such a case you hire an engineer. But if you know how to set up the instrument and take levels, or take a paced and measured survey you can often save the expense of an elaborate survey. I know of one place where the people needlessly paid $200 for a survey when a little common sense would have prevented it.

A last word about the ability to meet clients. This is important. It is very well to be full of ideas—to have dreams of beauty half expressed. It is another thing to make your client see them too. Not only do you have to impress upon his mind your own ideas but you have to wipe out all the preconceived notions which have been gathering in his brain for months. The world takes you at your own valuation. An air of confidence and an assumption of knowledge in the right place will do wonders, provided you are careful to back it up as soon as possible with solid work and real knowledge. When you find that you have to live up to your employer's opinion of you, you can do it if it entails hours of special study.

The first few years of office work should be regarded as years of further preparation, constant study and an extension of the training begun in college.
The Creed of the Students of the College of Agriculture

1. We believe that we are here primarily to secure an education.

2. We believe in living a well-balanced, symmetrical life.

3. We believe that to develop a well-rounded, vigorous, efficient manhood and womanhood we must be trained harmoniously, mentally, physically, morally, and that in one person there should be found the highest average of scholarship, physical skill and moral courage.

4. We believe that in order to develop symmetrically we must study faithfully, think clearly, play lively, eat heartily and sleep soundly.

5. We believe in inter-college athletics because of its wholesome emulation, mental relaxation, physical development and moral stimulus.

6. We believe that play is to the body what a good laugh is to the mind and a good deed is to the conscience—refreshing and invigorating.

7. We believe that it is no sin to play to win.

8. We believe that it is better to lose honestly than to win dishonestly.

9. We believe that true sportsmanship will recognize and heartily applaud a successful play on the part of an opponent.
10. We believe that the true measure of victory is in the quality of the opponent and fairness of the play, rather than the size of the score.

11. We believe that all selections and elections to positions of honor or trust within the gift of the students must be made wholly on a basis of individual merit.

12. We believe that efficient service and accomplishment should be suitably rewarded, whether in the realm of scholarship, athletics, journalism, public speaking or other legitimate student activities.

13. We believe that the greatest rewards are to be found not in medals, shingles, diplomas or applause, but in the consciousness of a work well done, a game well played, an honor fairly won, and that we have contributed to the honor and success of others.

14. We believe that every student owes an obligation to himself and herself, and to the college, to do something, while here, for the good of others and for Cornell.

15. We believe that the students of the College of Agriculture should set a standard for wholesome play, right thinking and clean living.

16. We believe that the students in the College of Agriculture subscribe to this creed and strive to live up to it, and that in this they have the hearty co-operation of the College staff.
The Cornell Countryman

S. G. JUDD, Editor
W. G. STEPHENSON - - Alumni Notes Editor
W. H. FRIES
D. G. WOOLF
A. H. WHITE
M. H. McCLEW
C. P. RIBSAM
G. M. BUTLER
B. P. JONES
W. DE S. WILSON

Associate Editors

Business Manager

Assistant Managers

MAY, 1911

In Closing

Another year has passed and the 1910-1911 board after this issue transfers the responsibility of publishing THE CORNELL COUNTRYMAN to the shoulders of the new board. We pass from the scene of action and assume whatever position we have earned among the figures of our College history. After a year’s experience we feel that it is truly a responsibility which the new board is assuming. We know they will be equal to the task before them. It is our conviction that each year since 1903 has witnessed progress in the development of THE CORNELL COUNTRYMAN. This progress will continue.

The COUNTRYMAN board as elected for 1911-1912 is as follows:


We regret very much that because of urgent duties at home, D. G. Woolf, ’12, and M. H. McClew, ’13, have been obliged to leave the University and thus will be unable to serve on the 1911-1912 board.

It is not without reluctance and some regret that we sever our connections with the COUNTRYMAN. Our labor in managing it and shaping its policies has inseparably bound us to it. Our interest in its welfare will always be sincere and we trust active as well.

Another reason why we dislike to stop is because of the many things we now see which might have been done and the greater things we are confident we could accomplish in the future. We hope the new board will build on our mistakes.

At this the last opportunity of talking through the editorial columns of THE COUNTRYMAN, the 1910-1911 board wishes to express its gratitude to everyone who has helped them produce the COUNTRYMAN. We extend this little word of appreciation to all the contributors, advertisers and subscribers; to all who offered suggestions and well meant criticisms, and to those who extended kindly words of congratulation and encouragement.

In the last chapter of our work we wish to emphasize what we have so often pleaded for—closer relations between the board of the CORNELL COUNTRYMAN and the whole student body, more active interest and more substantial support.
An Announcement
Cornell Countryman

It has been the custom of the Cornell Countryman to publish in its June issue the photographs, with write ups, of all the candidates for degrees in the College of Agriculture.

This is extremely expensive for us and after all is largely a repetition of the Senior Class Book. The senior classes of the past have never been willing to help out the expense by purchasing the halftones of their photographs from us at cost, we have no reason to assume that the present class would do differently. In view of these considerations the Countryman will not make senior writeups a feature of the June issue.

A Commendable Act

Dr. A. S. Alexander the veterinarian of the Wisconsin station who has done so much to advance the livestock interests of that state was recently presented with a late model Franklin automobile. The purchase money was raised by subscription from people of the state who wished in some way to show their appreciation of Dr. Alexander’s work. This present will greatly aid Dr. Alexander in the accomplishment of his duties because he has been of late so crippled as to necessitate walking with two canes.

The Cornell Countryman feels that the spirit which prompted this act is greatly to be commended. The farmers and other citizens can do much to further agricultural advancement if they will show some signs of appreciation of the noble, self-sacrificing work which the members of the staffs of the various Colleges and experiment stations are doing for the betterment of the whole nation.

Government by Politics

In our present scheme of government all public issues are decided by the votes of political parties. There are always at least two opposing parties and a question which involves the welfare of the nation is often decided merely on a basis of party patronage. We believe this scheme is wrong.

Today a man belonging to one political party may have served the interests of the people to the fullest of his strength and ability. The administration changes and he is removed purely on the principle, “To the victors belong the spoils.” Is this just to a faithful public servant and to his constituents whom he has served so well?

The time must come, and it will come just as soon as the people rise up and demand it, when questions such as Reciprocity treaties, Conservation and tariff will be adjusted impartially for the benefit of the whole people and not be simply bones of contention in political wrangles. Until then the nation is the great loser.

The rural population has long been known as a clear thinking conservative people. We urge them to take the initiative in this movement.
Improving the Quality of Eggs—An active campaign for the improvement of farm eggs in the Middle West was undertaken last summer by the Bureau of Animal Industry of the United States Department of Agriculture. This work was preceded by a general survey of the field in the spring of 1908, which showed that an enormous loss was being sustained annually as the result of spoiled and deteriorated eggs. This loss results from the ignorance, carelessness, or indifference of the farmer and from the dilatory and unsatisfactory methods of marketing in vogue. The actual money loss is suffered mainly by the farmer, while the loss in quality is born by the consumer. A report of this preliminary investigation was published as circular 140 of the Bureau of Animal Industry.

The campaign of the past summer had for its ultimate end the improvement of conditions surrounding the handling and marketing of eggs, and consequently the improvement of the quality of the egg itself as it reaches the consumer. Coincident with such improvement there will be a saving to the farmer of a great part of the money loss at present sustained.

The efforts have so far been directed mainly to education in better methods, cooperation with egg buyers and State authorities, and experimentation. The actual work has been done mostly in the State of Kansas. The educational work has been done by Department field men going among the farmers and impressing upon them the necessity of keeping eggs intended for market in a cool, dry place and of marketing them frequently. Incidentally they have given the farmers help whenever possible in the practical management and breeding of poultry, and have urged the keeping of pure bred poultry.

The Bureau sought and obtained the cooperation of the egg buyers of Kansas, and as a result the “loss-off” or quality system of buying was brought into use. By this system the bad eggs are rejected and only the good eggs paid for. There is no measure which has such a definite and far-reaching influence for the improvement of the commercial egg than the general adoption of this system of buying and selling. The State food authorities also cooperated by prosecuting under existing State law cases where bad eggs were sold. On account of the material improvement effected in the Kansas eggs, the movement has spread to adjacent States, and efforts are being made to secure uniform legislation in many of these States.

In the work of investigation various lots of eggs were traced from the time they were produced on the farm until they reached the packing house, in order to determine the factors causing deterioration and to study how conditions of handling and shipment may be improved.

The results thus far have been so satisfactory that it is proposed to continue the work in Kansas in about the same manner during the coming summer.

Prize Oat Contest—Through the Iowa Corn Growers’ Association, the International Harvester Company of America has offered the farmers of Iowa the largest amount of premiums ever given for the best samples of oats.

The premiums amount to $4,000, and include several of the most improved farm machines, from a disk harrow to a large shredder and also a scholarship in the Iowa State College of Agriculture at Ames. The award of prizes will take place during the ninth annual exposition and contest of the Iowa Corn Grower’s Association, to be held next winter.

The policy of the association is to divide the state into classes, thus making it possible for every farmer in Iowa, regardless of the variety of
oats he is growing, to enter the contest. Also plans are made whereby each section of the state can compete within itself.

These premiums represent another step in the policy of the International Company, through its I H C Service Bureau, to encourage and assist the farmers of America in the raising of larger and better crops.

In addition to the $4,000 for oats, the Corn Growers’ Association offers several thousand dollars in premiums for the best corn raised in the state. Last year these corn prizes amounted to more than $20,000.

* * *

**Canadian Reciprocity—** Whereas, The American Protective Tariff League has always advocated and now advocates a Protective Tariff which shall adequately secure all American industrial products, whether of factory or farm, against foreign competition; and,

Whereas, The League has an abiding faith in the wisdom of a policy which brings the factory and farm closer together; and,

Whereas, In our judgment, the Canadian “Reciprocity” Agreement is a gross violation of the policy of Protection in that it unfairly sacrifices the interests of American agriculture; and,

Whereas, The manufacturer cannot hope to retain Protection for his industry when Protection shall have been denied to the farmer; therefore, be it

Resolved, That the American Protective Tariff League is unalterably opposed to the adoption of the Canadian Tariff Agreement, and urges that all friends of Protection bring to bear every proper influence upon the Congress of the United States against the adoption of said agreement. Offered by John E. Reyburn, of Penn. Seconded by A. H. Heisey, of Ohio.
The Department of Horticulture is establishing some cooperative experiments in the rotation of vegetable crops on muck lands at several points in the western part of New York State. Mr. Paul Work has charge of the experiments.

An anonymous donor has presented the Department of Horticulture with a draft for $300 to cover the cost of printing a new edition of Bulletin 278 on the classification of the Peony.

More requests have come to the Department of Horticulture this year than ever before, for men to undertake field work in orchard and garden such as pruning and spraying. The firm of J. G. Harrison & Co. of Berlin, Md. offers to take fifty students for the summer, and give instruction in propagation work in their nursery and grounds at $1.00 per day and board.

Some cooperative experiments have been taken up by the Department of Horticulture with the National Sweet Pea Society and the American Gladiolus Society for the study of the varieties and nomenclature of these two groups of plants.

Next year's curriculum will include the new Department of Forestry under Prof. W. Mulford, and probably a Department of Rural Education which has had its beginning in the present work of Mrs. Comstock and Miss McCloskey.

In co-operation with the U. S. Dept. of Agr., the Department of Farm Crops is carrying on, in Broome County, an extensive investigation of the problem of the renewal of the run-down pastures of the State. Inasmuch as pasture lands constitute about one-third of the agricultural land of the State and in view of the fact that a large proportion of these pastures are highly inefficient, it is extremely important that the most economical methods of pasture renewal be worked out. Accordingly, four five-acre plots are being experimentally treated with the various fertilizers and with lime. Mr. M. C. Burritt, '08, is personally supervising the work in Broome County.

Those members of the class in Pomology who remained in Ithaca over Easter vacation were given a treat royal by Prof. C. S. Wilson of the Department of Pomology. Early Saturday morning about thirty members of the class railroaded to Geneva where they were met and given a straw ride to Prof. Wilson's home, a distance of about four miles. The remainder of the morning was spent in looking over the farm and accessories. At noon they were invited in to a big tempting dinner, after which a social hour was spent around the piano. A visit was then taken to the fine large orchards, which served as a splendid object lesson to the students. The class looked for the last time on the old "Indian Tree".
which has since been cut down. This famous old tree which is pictured in the “Apples of New York” was planted by the Indians before 1779. It had been grafted to two or three different varieties, and a few years ago yielded sixteen barrels of R. I. Greenings. The original Indian variety was preserved till the last on a few of the branches. It was a small, red striped apple, lacking flavor and juiciness. A hotly contested baseball game, umpired by Prof. Wilson, completed the days festivities. The best team won 14-2. * * *

A new, well illustrated Bulletin on “The Box Packing of Apples” by Prof. C. S. Wilson, is now on the press. * * *

About one-fourth the land at the east end of Alumni Field has been set aside for building purposes. The remainder has been divided up and will constitute experimental gardens for the Departments of Soils, Plant Physiology, Horticulture and Pomology. During the present season some will be tilled and cropped but probably the grading will not all be finished before next year. * * *

On the University farms there are 250 acres under cropping, aside from experimental plots. The Department of Farm Crops plans to plant as follows: To oats and peas for forage, 11 acres; oats for grain, 30 acres; corn, 70 acres; and root crops, 2 acres. There will be 18 acres of alfalfa and 87 acres of timothy and mixed hay to cut. * * *

There will be a Summer School in Agriculture at the college this summer for those teachers who expect to teach Agriculture, Home Economics or Nature-Study. It will be a six weeks’ course as in the regular summer session. There will be no tuition for the Agricultural Course. Those who wish to split their courses and to take some work in the University summer school, also, may do so by paying a small tuition. The Agricultural course will include no course given in the University summer session. * * *

The annual Rural School Picnic is being discussed for this spring and if it is held, May 26th will be the probable date. * * *

An enthusiastic and well-attended athletic mass meeting was held in the Auditorium, Friday evening, April 14. After opening the meeting by singing Alma Mater, the audience listened to an encouraging talk by “Jack” Moakley. Mr. Moakley assured the track teams of his support and urged those who had been successful in intercollege running to come out for the Varsity. Mr. Hugh Troy, ’96, next gave some valuable suggestions for the crew men and vividly described how good, hearty cheering helps the men in the boat. C. C. Cheney, ’11, then entertained the company with stories. During the evening, a quartette composed of G. W. Peck, ’12, C. W. Whitney, ’12, F. H. Perl, ’11, and J. P. Hausle, ’12, gave selections which brought forth very hearty applause. Hausle’s musical stunt at the piano was also most heartily received.

Prof. J. E. Rice, who presided, presented medals to the members of the different teams as follows:


The Cornell Countryman

Composer of the Agricultural College yell, G. M. Butler, '12.

After the awarding of the medals, the company adjourned to the hall where apples were passed around and a social hour was enjoyed.

* * *

The first meeting of the Poultry Association under the direction of the new board was held March 29th. Incubation was the general topic of discussion, particularly the advantages and disadvantages of moisture machines. Mr. F. J. Burgdorff, Jr., read a paper on incubation in Egypt. After the meeting adjourned B. Tyson, '12, and S. H. White, '12, gave stunts. Apples were served as refreshments.

* * *

The members of the Trumansburg Poultry Association were the guests of the Cornell Poultry Association on the evening of April 12th. The visitors explained the methods of their organization and the benefits of such societies in rural communities.

* * *

A class composed of seniors and juniors in the Department of Home Economics, with Miss Rose, spent three days during the Easter vacation in Buffalo and Rochester. The class inspected a number of lunch rooms, cafeterias, factories and other points of interest making a special study of the methods and practices of the restaurants, etc. in large cities. While in Buffalo the class went through one of the large packing houses. All voted it a most profitable and enjoyable trip.

Monday evening, April 17th, was the occasion of the one hundredth meeting of the Round Up Club.

To commemorate this important point in its history the Club held a "barbecue," inviting the faculty and student body as its guests. The meeting was held in the judging pavilion. Professor Wing outlined the history and purpose of the Round Up Club and told of the many benefits which students obtain from the organization. An average of twenty-five meetings a year have been held since its organization in 1906 with an average attendance of eighteen members. The other speaker was Dean Bailey who gave a characteristically good talk bringing out some means by which animal husbandry students were to greatly aid in the development of Society. Music was furnished by a trio consisting of piano and two violins, the former played by D. E. Smith, '14 and the latter by W. A. Hutchinson, '13, and J. P. Sanderson Jr., '14.

Refreshments consisted of roast lamb, brought in directly from a wood fire in the rear of the pavilion, and roast suckling pig, supplemented with Johnny cake and milk. It was indeed a novel and memorable occasion.

* * *

William Atkins, '12, has been appointed observer in the U. S. Weather Bureau Service and is to be located at Philadelphia.

Gilbert Beader, son of Ex-Governor Beader of Pennsylvania (for many years also president of Board of Trustees of University of Pennsylvania) visited here April 17th.

* * *

H. B. Cowgill, '10, visited about the College recently.

* * *

M. C. Burritt, '08, Professor Wilson's assistant during the short course, was here on a visit recently.
FORMER STUDENTS

'09, B. S. A.—W. H. Stark has been made assistant treasurer of Stark Brothers Nurseries and Orchard Co. and is assisting in the management of the largest nursery in the West. Mr. Stark married Miss Newhall, sister of John Newhall, the football coach.

'09, B. S. A.—G. Harold Powell has accepted a position as manager of the Citrus Protective League of California. The object of the Citrus Protective League is to promote the citrus interests of the Pacific Coast for the purpose of securing larger returns. He has a three year appointment at $10,000 per year. Mr. Powell was formerly acting chief of the Bureau of Plant Industry, U. S. Department of Agriculture.

'09, P. H. D.—M. B. Cummings is now Professor of Horticulture in the University of Vermont. He has been elected Secretary of the State Horticultural Society. Prof. Cummings is married and lives at Burlington, Vt.

Sp.—E. D. Smith, spent the past year in the fruit region of Oregon and Washington. During his leave of absence, he has had much valuable experience, especially in apple-packing. He has been very successful in apple-packing contests in connection with various fruit exhibitions on the Pacific Coast.

Sp. Ag.—W. E. Haynes is planting foreman of the firm Isaac Hicks and Son, noted nurserymen and tree movers, Westbury, L. I. The junior member of the firm is Henry Hicks, '05.

'08, W. H.—W. J. Toussaint, C. A. Rowell, W. H. '04, and Paul Keenan, W. H. '09, spent the winter in Southern Georgia planting pecans. Toussaint is now running a cotton and corn farm on his own account at Albany, Ga. Rowell has been made foreman of the Texas Orange Land Development Co. at Houston, Texas, where he superintended the establishment of several hundred acres of orange and fig orchards. He planted 1,000 acres with twenty trees per acre. Keenan is now foreman on the Rialto Farm at Ulster, N. Y.

'07, Sp.—Mr. S. W. Foster has been for two seasons in charge of a substation of U. S. Bureau of Entomology at Walnut Creek, Cal. He has been especially concerned with work on orange thrips and other citrus insects. Mr. Foster is closing up this work this month, and will be located near Washington hereafter.

'07, B. S. A.—Mr. A. G. Hammar who did some special research work in the Entomology department here during the fall, has been in Los Angeles, Cal. for the past two months doing special work for the U. S. Bureau of Entomology. Mr. Hammar has now returned to Michigan where he will continue his work on the apple insects under the direction of the Bureau.

Miss Edith M. Petch, Entomologist in charge of the Maine Agricultural Experiment Station has returned to Ithaca, to complete her graduate work in the Department of Entomology. Miss Petch is the only woman Entomologist having charge of a U. S. Experiment Station in the country. Her specialty is the “aphid” or plant lice group and she is a recognized authority in this field.

'09, B. S. A.—Announcement is made of the marriage of Chester C. Neal and Miss R. Elsie Love (Swarthmore '07). Mr. and Mrs. Neal are living at 1033 Shackamaxon street, Philadelphia, Pa.

'10, B. S. A.—Frank B. Kelley is with the Jackson & Perkins Company, a wholesale nursery concern, at New-ark, New York.

'10, B. S. A.—L. E. Johnson is with the Sheffield Farms-Slawson-Decker Company at Vergennes, Vt.
BOOK REVIEWS

The Country Life Movement.

In the first chapter of his latest work Professor Bailey outlines and defines the Country Life Movement, contrasting it with the "back to the land" movement. Other chapters which in their titles give hints as to the subject matter are: Some Inter-relations of City and Country, The Decline in Rural Population, Community Life, The Labor Problem, County and Local Fairs, Country Life and Conservation.

In the chapter, "The Fundamental Question in American Country Life" the author states, "The fundamental need is to place effectively educated men and women into the open country. All else depends on this."

The book closes with a chapter "Personal Suggestions." Today L. H. Bailey stands at the head of those people who are truly studying country life conditions. His experience and observations make him especially fitted to outline The Country Life Movement. All students of this problem if they do not obtain the Rural Outlook Set should by all means procure and carefully study "The Country Life Movement."


The Practical Flower Garden.
By Helena Rutherfurd Ely.

Mrs. Ely tells in an interesting manner the results of her experiments in landscape gardening; how to raise flowers and trees from seed, and how to handle them, as well as many other plants, so as to secure the best color effects and artistic display. The work is profusely illustrated with colored and half tone plates which show the reader what wonders may be accomplished by the proper use and combination of plants. It contains much of interest and value to all interested in beautifying the home or any form of rural art.

Published by The Macmillan Co., 66 Fifth Ave., New York, $2.00 net.

Sturgis & Walton Company, New York. $75 net.

The brief Report of the Commission on Country Life was submitted to President Roosevelt two years ago (in January, 1909), and by him submitted to Congress. It was printed by Congress for its use, but it has not been available for popular distribution. The call for the Report has been widespread, and it is now published in book form to meet this demand and to aid in putting the work of the Commission widely before the public. The purpose of the Commission was to determine the present status of country life in the United States, to point out its main deficiencies, and to suggest lines of action and inquiry. It could not make scientific investigations on its own account, but it proposed a number of investigations that should...
be made by Congress, states and other agencies. It looked on the question not from the viewpoint of technical farming, but as to means whereby country life may be redirected, to the end that a better rural civilization may be developed. It was the first inquiry of the kind, and wholly aside from its content the Report must necessarily form one of the starting points for forthcoming rural progress along economic, social, educational and religious lines.

“A PARTIAL INDEX TO ANIMAL HUSBANDRY LITERATURE” is the title of a recent contribution to agricultural literature by C. S. Plumb, Professor of Animal Husbandry at Ohio State University and author of that almost universally used animal husbandry text book, “Types and Breeds of Farm Animals.”

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The material is very carefully indexed and arranged under headings such as: Beef Production, Breeds of Animals, Cattle, Horses, Sheep, etc. The index includes some 1240 titles of books, pamphlets, bulletins and special articles. There is an index of authors in addition to the subject index. We advise all students of animal husbandry to obtain this extremely useful book.

The volume is 6¼ by 9 inches and contains 94 pages. Between each pair of index pages are blank leaves to allow space for adding other titles of references. Regular price, paper covers, 60c. postpaid, cloth bound $1.00. To students in Agricultural Colleges taking ten or more copies a special price of 50c for paper covers and 80c for cloth bound copies will be made. Publisher, C. S. Plumb, Columbus, Ohio.

HOME WATERWORKS, by Carleton J. Lynde, Professor of Physics in Macdonald College, Quebec.

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VIEW OF PLANT BREEDING GARDEN, CORNELL UNIVERSITY.
Article page 343.
The Call of the Farm

BY J. G. SCHURMAN, PRESIDENT CORNELL UNIVERSITY

One evening not long ago I found myself at five o'clock among the hundreds of students who were leaving the campus by Central Avenue at the close of the day's work. Most, if not all, of them were from other colleges than the College of Agriculture. I could not but hear the conversation of students in my immediate neighborhood, and two students behind me were talking of their future. One said to the other, "Do you know what I would do if I had some capital? I would go out and buy one of these cheap New York farms and become a farmer. I believe there is no better opening to-day."

I often recall this conversation, and since the editor of THE COUNTRYMAN has asked me to furnish him an article for this issue, I have been considering some of the reasons which might justify the sentiments and the resolution which I have just described. Without much regard to order, I will set down some of the considerations which might serve to attract young men to the pursuit of farming in New York State.

In the first place, there is one general inducement which applies to farming in every country and every clime. There is no more healthful occupation. It is an outdoor life which keeps one in healthful touch with the beneficent powers of nature. One is always breathing fresh air and enjoying all the sunshine that comes. It is a farmer's own fault if he does not always drink pure water. If the food on the farmer's table is plain, it is as a rule plentiful and substantial. He enjoys also all the gifts of nature—the open country, the arching sky, the changing scenes, seed time and harvest, the time of growth and the times of refreshing. These are the enormous advantages which the farmer enjoys in contrast with the inhabitants of our cities.

The farmer's life is one of the greatest independence. We have a complex civilization with infinite inter-relations and dependencies. Millions of our people, for example, are wage earners; but the wage earner is dependent on the employer not only for his wages, but for the opportunity to labor. The farmer is at once both capitalist and laborer. In this respect he is unique in the modern world. And this fact, along with the further fact that he does not live and move and act with the crowd, but settles his own problems for himself, encourages and develops the habit and practice of independence. A young man who values intellectual, moral, and economic independence might very reasonably look to the farm as a suitable arena for his career.

Thirdly, the farm offers attractions to-day to educated men which have never been operative at any other time. It is true that as farming never has been, so it never will be what is called a learned profession. It is characteristic of these learned professions that their devotees work with their brains and not with their hands. But so long as farming is farming, it will call for abundance of work with hand and muscle. In the past, farming has consisted of these manual operations and of little besides.
In our time and country, however, we have in recent years come to recognize the indispensableness of combining brain work with hand work in farming. We have discovered that the industry must be re-vitalised by means of scientific knowledge. And in a comparatively short time the methods of farming, at any rate among the best farmers, have been reconstructed on the basis of scientific agriculture. For in America at any rate, we have come to a vivid realization of the fact that farming is an art which, having to do with animals and plants and soil and atmosphere, rests necessarily on principles and facts which are ascertained by the sciences of botany, zoology, geology, physics, and chemistry. It is true that the expert in these sciences may make a very poor farmer, but on the other hand a young man who has the practical gifts qualifying him to become a farmer will have an enormous advantage over his competitors if he knows something about these sciences and is able to apply what he knows to the business of tilling the soil or fruit growing or dairying or raising flocks and herds. If farming has not become a learned profession, it is no longer at least a place for ignorant drudgery, routine, and rule of thumb. Just as the modern farm unifies capital and labor, so it also combines manual labor and scientific activity. And in these respects it cannot fail to attract young men of education who are not afraid of soil ing their hands with nature's dirt.

There is a fourth consideration which confirms the good sense of this Cornell student—presumably not from the College of Agriculture—in selecting for himself the career of a farmer in New York State. He was evidently looking at the matter largely from the financial point of view. It was his thought that farming in this State would in the future prove a reasonably good investment. And since I have heard his remark I have found confirmation of his faith in the fact that a number of farmers from the agricultural states of the west have been buying farms within a radius of thirty miles of Ithaca. These are practical farmers who have had experience in farming in the great agricultural states of the west. Their forecast undoubtedly is that the great rise in land values which they have witnessed is likely in the near future to repeat itself in the State of New York. And the statistics of our State and Federal Departments of Agriculture furnish confirmation for this expectation.

Nothing could be more misleading than the assumption that land in an older state like New York is worn out and the crop returns constantly decreasing. So careful and reliable an expert as Professor Warren has shown that in
New York State the average yields of corn, oats, and hay are practically the same as they were forty years ago, while if the yield of potatoes has decreased, the yield of wheat has increased; so that on the whole the crop yields in this State average as high as formerly. Nor is it a fact merely that New York is holding its own; on the contrary there is marked improvement in recent years; the yields for the last ten years are much better than for the preceding ten years. Also Professor Warren shows that if you take not merely an average western state, but one of the best of them like Illinois, the crop yields per acre in New York State are nearly as good as they are in the best western state. Nor does this tell the whole story or the most important part of the story. For New York has one advantage over any and all of the western states which our farmers should never be allowed to forget. It has the best markets in the world at its own door. And from this circumstance it results that the values per acre of our crops are much above those of Illinois and still further above those of Iowa. Taking the five staple crops, corn, wheat, oats, potatoes, hay, Professor Warren shows that the average values per acre of these five staple crops have been $19.42 in New York, $16.70 in Illinois, and $13.96 in Iowa—a very decided advance in favor of New York.

I think on the whole the Cornell student in Arts or Engineering whose remarks I have made the text of this discourse is amply justified by the facts in reaching the conclusions he expressed. It is only fair in conclusion to state explicitly that he also recognizes the financial conditions necessary to great success. “If I had capital,” he said, “I would buy one of these New York farms and go into farming.” Now I think it must be recognized that in the future farming, like any other business, will call for capital. Industry is not enough, science is not enough, good management is not enough. All these things are essential, but in addition capital will be required to secure the necessary area to make farming profitable. Farms are growing larger in this State and elsewhere, as is proved by the fact that you often see vacant farm houses on lands that are nevertheless cultivated. For certain kinds of farming considerable areas are necessary. Thus Professor Warren declares that his statistics show that general farms and dairy farms of from one hundred to two hundred acres are paying much better than smaller farms.

The return to the land is one of the most encouraging features of our time. I am delighted to hear young men of character and education in such large numbers planning to become farmers. I would not discourage them by pointing out that capital is as essential in this business as in any other business in the modern world. On the contrary, to those who have capital I would say the farm, if well selected and intelligently and capably worked, is a good investment. And to those who have no capital but their hands and brains, I would say these may yield as good results when applied to farming as when used in any other way.
FIRST SUMMER SCHOOL IN AGRICULTURE

By J. S. Brown, '13

For the first time the College of Agriculture at Cornell plans to hold a Summer School in Agriculture. The school lasts from July 6 to August 16th, 1911. The plans are about completed and the list of courses includes work in many departments of the College.

The object of the Summer School in Agriculture is to train persons who desire to teach agriculture, including nature-study and home economics, in the schools. The courses are open to other qualified persons aside from the teachers who wish to enter.

Instruction is given in three groups of courses, in any one of which a person may spend all of his time. The groups are:

Group 1—Agriculture. This covers the work in Soils, Agricultural Chemistry, Farm Crops, Animal Husbandry, Dairy Industry, Poultry Husbandry, Pomology, Farm Management, Entomology, Plant Pathology, and Meteorology. These subjects have been scheduled into a consecutive program and the instruction in each one of them will continue for approximately one week.

Group 2—Nature-Study and Elementary Agriculture. This covers the history, development, and pedagogies of the nature-study idea. The work will deal with school gardens, the collection, preparation and preservation of materials, rural education, nature literature, and specific lessons in elementary agriculture and nature-study as outlined in the syllabus issued by the New York State Education Department for 1911-12.

Group 3—Home Economics. This group will cover the general subjects of food, human nutrition, and principles of household economy and sanitation.

The Summer School in Agriculture is distinct from the regular Summer Session in Cornell University. Any of the courses in the regular University Summer Session may be elected by qualified students registered in the Summer School in Agriculture. For a course thus elected a fee of $15 will be charged; for more than one, $25 will be charged.

There will be no examination for admission. Each person must satisfy the instructor in charge of any course that he is qualified to pursue the work.

Non-residents of New York State will be charged a tuition fee of $25.

Academic credit will be allowed for the work in Nature-Study and Home Economics, as announced in connection with these courses, but no university credit will be given in Agriculture. The Agriculture, though, may be counted for entrance to the University on passing a special examination for that purpose.

THE COUNTRY ROADSIDE

By M. W. Evans, B. S. A., '06

In the East dense hedge-rows of brush develop along many of the neglected road-sides. Usually, when the branches have begun to crowd into the roadway, the owner of the adjoining farm cuts down every one of the young trees, piles the brush, and later burns it. The roadside then presents an unsightly spectacle. The soil is burned bare of all vegetation and is dotted with charred stumps. Weeds soon spring up among the stumps, and often within a few years there is a new border of brush growing again.

The accompanying illustrations show a row of trees through a farm in north-eastern Pennsylvania. Originally, where this row of trees is now growing, there was a mixture of young
maple, wild cherry, and black birch. About fifteen years ago, Mr. W. H. Evans, who was then the owner of the adjoining farm, cut out all of the cherry, most of the maple, and left some of the birch at about uniform distances apart. The young trees were carefully trimmed and headed at a height of about six or eight feet above the ground. During the next few years all brush sprouting up from stumps or from seeds was carefully mowed down. As a result of the continued mowing, the brush and weeds were gradually re-placed by grass.

On both sides of the road there is now a row of thrifty birches, which already cast a considerable amount of shade during the summer days. This is the only place of which the writer knows, that birch trees are used for shade or ornament along country roads. When the trees are in full leaf it is one of the most attractive rows of shade trees that he has ever seen. There are hundreds of miles of roads in the eastern states, now lined with undesirable hedgerows, which could be easily converted, with a small expenditure of labor, into as beautiful driveways as the one just described.
THE PLAYGROUND IN RURAL COMMUNITIES

[Abstract]

By L. H. Bailey

It is an old quotation that "variety is the spice of life." It seems to be a mental need that a person shall have change in interest and in occupation if he is to lead the most resourceful and effective life. It is an old saw that "all work and no play makes Jack a dull boy." It is just as true to put the statement the other way round and to say that all play and no work will make Jack at least an ineffective unit in the world, if it does not make him actually dull. At all events, it is true that all play and no work makes one a parasite. Therefore, I do not advise the introduction of play merely because it is play, but in large part because it is one element in the necessary diversity in life.

One's occupation and one's normal activities are really educational, whether they are consciously recognized as such or not. The nature of the outlook on the world is determined very largely by the character of the vocation and of the normal and necessary pursuits in life. The diversity in affairs, so long as one's interests are not merely dispersed, multiplies one's points of contact with the world, opens the mind, enlarges the horizon, stimulates the imagination, and, therefore, adds to one's resources.

There are two reactions to the conditions of life. One is the reaction of the person who would escape these conditions and be "free." As a matter of fact, there can be no real freedom so long as there are two or more persons in the world. The other reaction is to utilize the conditions of life as best we may for our happiness and growth. Of course, we are not to be satisfied with the conditions of life, else we make no progress; but we are to utilize the common occupations, the common play, the common diversion, and all the rest, as part in a scheme of human evolution.

The consciousness that diversity of interest and experience is essential to best development is well expressed in the rapidly extending habit of reading, in the extension of good sport of all kinds, in vacationing, in the enlargement of the means of entertainment and enjoyment, and in the shorter hours of labor for operatives. It is now necessary that we effectively organize these agencies of diversification.

The farmer is no exception to all this. He needs diversion as well as other persons, but the farmer's business comprises the round of his life. He lives on his farm. His philosophy of life grows directly out of his farm and out of his occupation. He does not need to be transported wholly away from his business, and he does not require exclusively the extraneous and the exotic. He is able largely to control his conditions and he works for himself, and he ought to develop his own type of life. The farmer is a part of his background.

New prospects must be set before the farming people, as before all other people. There is no one movement or innovation that will solve the rural problem, any more than it would solve the city problem. The problem of re-directing rural affairs is very complex. The new rural civilization must gradually evolve out of the old. It seems to be clear, however, that we should provide the farmer with only such innovations as are strong, native and significant. We must not attempt to make him a city man, nor to take him out of his background. We must be careful not to impose his improvement on him, but to let such improvement grow out of the situation.

I am convinced that we need to give much thought to plans for rural re-creation. By the word re-creation I mean what it actively and verbally
signifies—to create again. I do not mean merely entertainment or amusement or diversion. We need to create broadly new real interests, new enthusiasms, and new incentives. This is not a question of play or of sports alone, but rather of the refreshing of the life in general.

**MEANS OF RURAL RE-CREATION**

If we are to have better rural re-creation, we must first of all have better agriculture. Better technical farming and a more carefully organized farm plan, will give the farmer the time that he needs for other interests. In future he will be able to command at least one day a week, aside from Sunday, for reading, study, vacation, and other forms of re-creation. He may not be able to secure this day in every week of the year, but he ought to be able to average this much. The farmer’s free time is to come not so much by the actual shortening of the hours of labor each day as by the organization of his business in such a way that he will have whole days to himself. This will evolve a different philosophy of the lessening of the hours of physical labor from that which obtains in the workingmen groups; and this factor must be clearly recognized by our social economists. The farmer will not only overcome the physical slavery of his business, but he will acquire a useful degree of real mastery over his materials and his situation.

Rural re-creation must be projected for the entire rural population. It must apply to the old as well as to the young, and to the young as well as to the old; therefore, a formal playground scheme, while exceedingly useful, is not in itself sufficient to provide all the re-creation that the open country needs.

The rural re-creation should be properly educational. It should have relation to life, and not be merely a patch applied to the social fabric. It should be more than mere relief from toil. I think it is possible to develop a re-creational movement that will be educational at the same time that it will have all the needful elements of change, of reanimation, and of escape.

Rural re-creation ought not to be dominated by the towns, even though they are rural towns. Such enterprises should grow out of the finances and the consciousness of the open country. I should be glad to see the persons in the towns contribute their share to good plans of rural re-creation, but I should be sorry to see such plans supported by the townspeople. They should not be supported by merchants bankers, implement dealers, grain dealers, cattle buyers, or other traders. Rural re-creation should not come as a concession to farmers. The farmer has a right to such development, as a part of his normal scheme of life. It is our position to aid him to work it out.

Plans for rural re-creation should be manifestations, as far as possible, of real rural organizations, coming out of the grange, the church, the school, and other agencies already established. Some of the re-creational agencies that are already effective are the grange picnics, school picnics and field days, family reunions, harvest home festivals, old home weeks, old settlers’ days, celebrations of anniversaries, and fairs (particularly the local fairs).

**THE PLAYGROUND**

It is as impossible to develop good re-creational features in the open country without an establishment for the purpose, as to develop a good school without a schoolhouse and a teacher, or a good religious movement without a church building and a pastor. Every community should have a permanent place set aside for re-creational enterprises. This should have the greatest connection with the out-of-doors. It should be primarily a grove; and I suggest that if there is no grove in a community that is adaptable to such purposes an area be planted definitely with this end in view. This grove should be provided with seats, picnic tables, and a speaking stand. Somewhere in connection
with it there should be a building, preferably one that would serve as a community hall. There should also be a regular playground, to be as consciously set aside for play and for games as a town-hall is set aside for public business or as a fair-ground is set aside for fairs. Perhaps the local fair-ground could be incorporated into the re-creational scheme.

We must distinguish between games and play; and also between athletics and play. We should, of course, develop many good games; but we specially need to have kinds of play in which all the young people may engage. Games are likely to be organized for the few rather than for the many; and athletics is the development of feats of skill on the part of a very few players.

It is essential that we make the most of all the common, native and usual kinds of play and games. No doubt something can be done to revive old-fashioned sports. The introduction of exotic and theatrical sports is undoubtedly desirable in many cases, but they should be projected on the background of common indigenous activities.

Play is worth the while when it is merely spontaneous and undirected; but it becomes very much more useful as well as enjoyable when it is definitely organized and supervised. The time is coming when we must have in each large rural community an expert in re-creation as we now have an expert in teaching, an expert in ministering, and as we shall soon have local experts in various phases of farming. These experts will organize what will be essentially experiment stations in social practice and social justice. They will introduce not only games and play, but also re-direct the music, the drama, and many other public expressions of the open country.

**The Thing to be Desired**

Many interesting suggestions are now being made for the more rapid evolution of country life. Certainly not all of them can be worked out in our lifetime. Perhaps many of the suggestions will be found, on experience, to be impracticable, but I am convinced there are two objects that need always to be kept in our vision: we must aim to diversify country life; and we must likewise aim to make it active.

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**The Man Who Was Well Content**

By Jared Van Wagenen, Jr., '91

A long life time ago in the first quarter of the century behind us there lived on a farm in the hill country of eastern New York, a farmer named Paul, whose father had been one of the German Palatines who in the years before the Revolution played so large a part in the settlement of the Mohawk valley and its tributaries. Paul must have been born a few years before 1800 and grew up during the times when men still vividly remembered the horrors of Indian warfare; when a secure and substantial civilization was rapidly replacing the rigors of pioneer days, and when men never planted a vine or tree with any assurance that they should live to eat the fruits thereof. So when Paul's father was carried out by his neighbors and his family stood about his grave in the little cemetery behind the Lutheran Church, Paul found himself established as the master of the farm. It was not one of the best farms—lying high up among the hills where the winters were long and cold—and yet it seemed to him a very pleasant place to live. He owned in fee simple 200 acres of land. In summer the white clouds floated over it, the sunshine lay warm on the dimpled bosom of the earth, and Paul watched his wheat fields be-
coming bronzed and golden; watched his cattle lazily wending their way to pasture, and later watched his corn growing ready for the harvest. When the sharp, bright frosty nights of October came, then under the light of the Hunter's Moon, he saw his orderly array of corn shocks like an army bivouacking under the stars. Then followed the husking, seized on by the young as an excuse for meeting and merriment, when the cider pitcher and the pumpkin pie crowned the board and when the lads were led to rustic chivalry and the maids to coyness and yielding. A little later when the days were shorter, when the fall plowing was finished and the frost began to grow bitter, there came from the barn, day after day, the noise of the flails that beat out the wheat. Then when the white blanket of winter covered all the land, the wheat, the money crop of the farm, would be drawn to market, at first 50 miles to Albany, later, after the completion of the Erie canal in 1825, twenty miles to the Mohawk valley. Then the long, mid-winter months came on, the snow deepened in the forests that clothed the hills, and the great wood pile day by day grew ever higher beside the kitchen door. Sometimes there came days when the wild northwest wind roared across the frozen land, when the great maples and pines rocked and moaned in the blast; and Paul sat snug and at peace beside the great kitchen fire-place plying the crackling flames with fuel, chatting and gossiping of many things and was well content. It was an era when old manners and by-gone customs still lingered. Paul, and his father before him were American citizens and voters, yet when Paul spoke in his family it was in the tongue of the valley of the Rhine. Doubtless, he was by our standards an ignorant man. I fear he planted his potatoes by the moon. I fear that he treated his cattle for hollow-horn, and wolf-in-the-tail. Yet, after all, he could not find fault with book-farming for the very idea was strange to his vision. But every year he summer-fallowed as much land as he could handle and abundant crops of wheat rewarded this most careful husbandry.

This was still in the golden age of home spun. The farm establishment was supported almost entirely from within its own resources. Every country neighborhood was an empire in itself. From Albany by team came a few articles of luxury; fine cloth, pottery, molasses, a little sugar, spices, codfish, salt and often, if we must confess it, liquor; also such implements and tools as were beyond the arts of the village blacksmith, and the local craftsman. But these articles were only a very small part of the whole. Every year Paul's little field of flax glowed as blue as the summer skies above it. It would have to be hand pulled, retted in the autumn dews, later hetchet, and then beneath the hands of his household grew into skeins and into shirts, dresses, table linen, and grain bags. The wool from Paul's little flock of sheep went first to the tiny local carding mill, and then all winter beside the kitchen fire the spindle sang or snarled and the needles gleamed and clicked as the yarn grew into socks and mittens or the loom thacked as it drove home the wool into thick and honest woolen cloth.

One cow furnished the winter supply of beef, and the hide together with several calf skins went first to the local tannery to be made into leather, and later was made into the family boots and shoes by the itinerant cobbler who wrought beside the fire of his employer. To a degree of which we can hardly conceive today, the farm and its affairs were maintained within itself.

There was sugar from the maples, wheat, corn, beans, buckwheat and many other crops from the field and garden. Garments, bedding and twine were derived from the farm flocks and herds. Beef, veal, mutton and pork came from the same source; and finally, even to the last, the very coffin was made with the long plane and the saw by the local undertaker out of broad pine boards sawed on the
The problem of agriculture in that time was to make one farm minister to every need of the family almost without external aid. The farm-house and the fields around it was an industrial world, and of such an organization Paul was the patriarchal head.

So the friendly years came and went. Each spring brought to the farm the miracle of reviving life; every autumn the bounteousness of the summer was garnered into the barns. Paul was sprung of a virile, prolific race and as the years slipped by and his locks grew thinner and whiter than of old, it came to pass that he sat at the head of his table and looked down along a mighty line of sons which, in number, if not in name were rivals of Jacob's tribe of old.

Now, when Paul saw these stalwart sons that fairly thronged the house, he, like a wise sire, considered much about the career of these boys and how they should come in future to be an honor to him and to his race. So he planned that when each son was of age and according to the custom of his time, took for a wife a daughter of the surrounding farms, to buy for him a hundred acres of land, paying $1000.00 on the purchase price and bidding the boy make good for the rest. So one by one, these boys went out into life and as they went, the father made the same provision for each except to young Paul who, because he bore his father's name, he gave the old homestead which was to be the new world cradle of his race.

Such was Paul's life work and doubtless it was a very humble one. Certainly his career had in it nothing of the spectacular, but out of that 200 acres of land he had reared to manhood a mighty family, and when at last he died, an old man full of days and content, it was a goodly company of bronzed, blond-bearded farmers' sons who stood about his grave. They had themselves come from that soil and out of it by primitive and slow methods had been wrung the beginnings of a patrimony for each. Unquestionably, when he had witnessed his sons established, each on his own 100 acres of the green earth, he had rejoiced as a man who had been permitted to see many blessings and to whom the fates had shown favor.

Once you could have driven down that stretch of country road curving between the hills and found these sons of Paul; a whole community of men bearing one common name. None of them ever achieved any great success, none ever were known beyond the circling hills that sheltered them. They were merely patient, plodding men who believed little in the new agriculture, who farmed much as their father had, who paid their honest debt and looked out on life with kindly eyes and were well content.

Some of Paul's sons are old now. Some have followed the sire on his long Pilgrimage. Few of them have sons who will take up the work where they lay it down. His grandsons are doing almost everything in the world except the work to which they were born by inheritance and tradition, and these farms that 75 years ago meant so much to Paul are today being sold to the alien and to the stranger. And if Paul had lived today I fear he would not have planned for those sons the life work that he did. He would have expected them to migrate and to find a place for themselves in the city. He would have given them to become a cog in the wheels of a corporation. He would have dreamed that some day they should rise to be assistant foremen and smoke cigars instead of a pipe and live in one side of a rented house on the avenue and buy their milk in a bottle and their potatoes in a paper bag forgetting how their ancestors walked between their plow handles and turned over the brown earth in the spring sunshine.

But I feel that the world is poorer today, because there are not more men who plan as Paul did when he lived with that great family of lusty sons around him, three-quarters of a century ago up in the hill country of eastern New York.
PLANT-BREEDING FOR COLLEGE STUDENTS DURING THE SUMMER VACATION

By Arthur W. Gilbert
Assistant Professor of Plant-Breeding, New York State College of Agriculture

Plant improvement by breeding is as much a farm problem now as the kind and quantity of fertilizers or the amount of cultivation. Every farmer, and especially every college-bred farmer, should give these matters very careful consideration. Maximum crops of the best quality are produced only after a careful study of the many factors involved in the growth of plants. Heredity is one of the most important of these factors. High producing strains of plants are as desirable and necessary as high producing strains of animals. It is much easier and requires less time and expense to breed pedigreed plants and the returns are as great as with pedigreed animals. Here is an opportunity for the college man who lives on a farm during the summer to lay the foundation for highly bred strains of farm crops, garden crops or fruits. The final results may not be reached for several years but a good beginning can be made.

First of all, study the crops already growing on the farm and determine wherein they may be improved. Study the market also to become acquainted with what the public demands. Find out wherein these crops may be improved to meet that market. If the crop is badly diseased or is susceptible to disease it would be desirable also to produce a disease resistant strain. One should become familiar with as many varieties as possible to determine if the desirable qualities demanded are not already combined in an existing variety.

There are two courses open to bring about improvement: hybridization and selection. If a sufficient number of desirable qualities do not exist in one variety it may be that two varieties contain them. In this case it is obvious that a hybrid between the two varieties should be made in an attempt to combine the good qualities of each. Perhaps later on combination with a third variety will be necessary.

Many hybrids may be made in the course of a summer. Whenever two plants are crossed, one should have in mind a definite ideal, unless the crossing is done simply as a matter of practice.
Selection will probably be a more usable tool than hybridization for the student to use during the summer to bring about plant improvement. The flowering season of many plants will have passed when summer comes, and hybridization will be impossible.

In many plants, a new combination of characters is not what is desired as much as an intensification of the characters which already exist, for example, breeding for increase in yield.

Selection means "breeding from the best." It is first necessary to find the best before it can be used for breeding purposes. I think we may say that the principal task or opportunity which the student may have in improving farm crops is to search out and find the best plants. These plants are often the beginning of new varieties.

As a field practice, single type selection, that is, picking out good plants here and there and testing their producing power separately, is replacing the so-called mass-selection in which a whole field is considered collectively.

Scrutinize the timothy, oat and wheat fields for the best plants. If a good timothy plant is found, dig it up and transplant it to a breeding patch where it may produce seed without being cut down. Go thru the grain fields just before harvest and select out the plants with largest and best heads, if their other characters are good, and save the seed of each separately to be tested out. Do the same with tomato or other garden plants. Save the seed separately of the best plants.

Some beautiful heads of smoother wheat attracted his attention and they were saved and the seeds planted by themselves. These produced the wheat later named the Fultz. The Tappahannock wheat which, in 1882, was considered to be a valuable race, was found in 1854, by a Mr. Boughton of Essex County, Virginia. The account of its discovery as given in the Report of the Department of Agriculture for 1872, is as follows: "He noticed in his field a bunch of wheat of such growth as to attract his attention * * *. At harvest he found it to be a white wheat, at least two weeks earlier than the surrounding red wheat." Gold Coin wheat, a seedling sport, differing from the hybrid Mediterranean in being bald and white, was found by Mr. Ira W. Green, of New York, in a field of that race and improved by selection. In the next five years the type was fixed and increased in yield about ten per cent.

To produce varieties in this way requires skill in recognizing the valuable plants and patience in testing them out. Such varieties when produced, however, often remain permanent for a long time and may play a very important part in the plant production of any region.

When Burbank was a young man at the age of 17, he began the breeding of plants. One of the first successes which he enjoyed was his origin of the famous Burbank variety of potatoes.

Another young man who has been very successful in breeding work is Mr. Howard N. Brewer, of Connecticut. In 1907, when about 20 years of age, he won the Orange Judd Corn Contest, a $100.00 prize for the best and most profitable acre of corn grown in the United States, the yield for that year on an average being 121½ bushels of shelled corn per acre. In 1908, a surveyed and measured acre, husked and weighed under the supervision of town officials, yielded 133½ bushels of shelled corn.

There are great possibilities for young men in this line. Start the work this summer.
ART EXHIBITION OF THE DEPARTMENT OF DRAWING

A VERY pleasing exhibition of the work of the drawing department was given in May by W. C. Baker, Assistant Professor of Drawing. The exhibition included everything from the simplest pencil sketches to some very fine oil paintings by Mr. Baker, himself.

Among the pictures deserving special note were some pen and ink sketches by G. N. Wolcott, F. A. C. Smith, and H. C. Sands; a white owl by Miss Earl, and a chipmunk by M. C. Butts, both in watercolor; and some pencil sketches by Miss Badger, C. T. Gregory, and A. L. Deane. The collection of paintings and sketches in oil, water color, and black and white by Mr. Baker attracted much attention. Many of the sketches and water colors were made in the Catskill Mountains while some of the best paintings were of European scenes. A very lifelike portrait of an old French fisherman in oil color was taken from life in a small French fishing village, where Mr. Baker was studying.

The Department of Drawing has become more popular each year since its introduction three years ago, and is doing splendid work in training the students to observe when on the farm or in the laboratory.
HIGH SCHOOL AGRICULTURE IN NEW YORK STATE

By F. W. Howe
Specialist in Agricultural Education, N. Y. S. Department of Education

FOR a few years previous to September, 1910, an elective course in agriculture was offered in certain public high schools of New York. A specially trained teacher was not required. The course was general in content and method, the recitations were given but three times per week, and academic credit toward graduation was allowed to the extent of only three counts in a total of seventy-two required for the academic certificate.

Beginning with the school year, 1910-11, a new secondary "syllabus in agriculture" went into operation, and a new amendment to the Education Law of the State, which displaced the course just mentioned. The new syllabus provided for seven distinct subdivisions of the agricultural course, and the law made provision for specially encouraging the high schools to secure trained teachers of the subject, while permission was also continued to teach the new courses for academic credits as before.

For administrative reasons, this amendment called for a sharp distinction between the two ways of teaching the subject of agriculture and others closely related to it. This distinction has come to be recognized in the official use of the terms "academic" and "vocational" agriculture. The former term is now definitely applied to the teaching of the subject by the best teacher available in a given school, largely as a cultural or general-information elective in the regular academic or college preparatory course. Each of the half-year courses is allowed two and one-half "counts" and the one full-year course (in dairying), five counts, aggregating a total allowance of twenty counts which may be earned by election out of the required seventy-two.

With the inauguration of the "vocational" courses in agriculture the required work in this and closely related subjects was increased to thirty counts, equivalent to five-twelfths of the student's time, and the instruction is required to be given by specially approved teachers. The ten additional counts are made up outside the courses outlined in the agricultural syllabus in a way that is explained later.

It will thus be seen that twenty units of the agricultural work are common to both the "academic" and the "vocational" courses, so far as the general scope of subject-matter is concerned; but in the "vocational" courses the work of both teacher and student is expected to be much more intensive and thorough than in the "academic" courses, and also to be more particularly adapted to the agricultural and industrial interests of the local community. In both types of instruction the work is not subject to uniform state examinations but the credits are determined on inspection and approval by the State Education Department through its Division of Vocational Schools.

The general nature of the special agricultural courses outlined in the Secondary Syllabus may now be briefly described. Each of the first six of these courses runs for half the school year. The following outline indicates the general nature of the work planned:

SYLLABUS COURSES IN AGRICULTURE

Cereal and Forage Crops
(30 exercises)

Soils—water holding capacity, drainage, mulches; fertilizer materials, mixing, and test experiments.
Grasses and legumes—special study of alfalfa.
Small grains—clover seed analysis and valuation, seed testing; cereal spikelets, inflorescence of oats, rye, wheat, barley; wheat, flour—gluten content; treating oats for smut; grain drills and their operation; plant-to-row testing of oats and other grains.
Corn—various types and characteristics, field study, field selection and storage of seed; minute study of kernel, seedling and plant structure; corn smut; corn judging; ear-to-row tests.
Farm weeds—recognition, control; spraying of mustard.
Crop rotations.

Poultry Husbandry
Recitations—feeding; breeds, vitality, breeding; killing, picking, marketing; diseases, parasites, vices, sanitation; construction of poultry houses; incubation, natural and artificial; brooding, natural and artificial; feeding and fattening chicks; capons, broilers; turkeys, ducks, and geese.
Laboratory exercises (16)—study of egg and meat types, parts of the fowl; killing and picking; determining age, sex, and vitality; mixing poultry feeds; study of the egg; structure, marketing, preserving; planning and constructing poultry houses, coops, feed hoppers.

Animal Husbandry
(14 exercises)
General—habits of farm animals; teeth.
Horses—types, soundness, age; feeding, measuring, weighing, scoring; harness and harnessing; plan of horse barn.
Sheep—types and breeds, feeding, classification of wools, plan of sheep barn.
Swine—types, breeds, feeding.

Potato Growing
(26 exercises)
Structure of plant and tuber; related plants; mulches, drainage, fertilizers; seed cutting, sprouting; potato blight, beetles, scab control; potato-growing machinery, cost of production, plan in crop rotation; hill test and selection, potato judging; time to market, quality, shrinkage.

Fruit Growing
(19 exercises)
General—seedlings, cuttings, layers budding, grafting, planting; drainage, fertilizer materials and mixing; spraying machinery; San Jose scale; fruit exhibits.
Peach—fruit and leaf buds; leaf curl, pruning.
Cherry—fruit and leaf buds.
Grape and bush fruits—pruning.

Apple Growing
(19 exercises)
Fruit buds, budding, grafting, planting, pruning, cross pollination; codling moth, scab, San Jose scale; spraying, machinery, Bordeaux mixture, lime and sulphur; drainage, fertilizers; varieties, judging, box packaging, exhibits.

Dairy Husbandry
(Full year, 36 exercises)
Cows—breeds, age, measuring, scoring, control of kicking, dehorning.
Feeding—hays, grains; nutritive ratio, forming balanced ration; measuring grain, hay, silage.
Milk—rough analysis, keeping quality, bacteria, pasteurization; action of rennet and pepsin; cost of production.
Milk products—cream, butter, cottage cheese; preparation of starters.
Exact determinations—Babcock test of whole milk, skimmed milk, cream, milk ash, acidity; use of Quevenne lactometer; weight of carcass by measurements.
Plan of dairy barn.
As previously stated, the foregoing courses are allowed a total credit of twenty counts in both the "academic" and "vocational" plan of study. To meet the additional requirements of the vocational type of instruction, ten
counts more are provided for as follows:

**Special Work in Vocational Courses**

Five units are included in a year's work in mechanical drawing, plain carpentry and joinery, and simple farm mechanics, including some acquaintance with the use, adjustment, and repair of farm machinery and the operation of gasoline engines. The drawing exercises occur three times per week (forty-five minute periods), and the "shop work" in two double periods.

The remaining five units may be chosen from any one of these lines: (1) A half-year course in physics (2½ counts), and a half-year course in chemistry (2½ counts), taught with special reference to the application of their fundamental laws to farm practice and household arts; or the two subjects may be taught together throughout a whole year. (This course is to be required of all agricultural students who have not had the regular academic courses in physics and chemistry.) (2) A course in general biology (5 counts) so presented as to introduce the most common plants and animals concerned in agriculture or commerce that can be utilized for study and illustration, in preference to those having no economic value or harmfulness. In this work the course outlined in the Secondary Syllabus in Biology is to be used, but only for general guidance as to the order of development of the subject. It must be supplemented quite largely with special bulletins on plants and animals of economic interest and by approved laboratory work. (3) A course of educational "home project" work on the farm or in the home, outlined and guided by the Department and the local schools, and so developed as to be educationally equivalent to a five-count study course. This is designated as "Agriculture VIII." All work outlined in this paragraph is to be taught only by the special teacher accredited for agriculture or home economics, in order that the vocational motive and character of the work may be beyond question.

A considerable latitude is allowed to any school that is arranging to do its first elective work in academic agriculture. The privilege of selecting the particular course which most fully meets the initial interest of students and community, often serves a useful purpose in developing a later demand for the regular vocational courses under a special teacher. It is believed that this result follows the study of the several differentiated lines of instruction covered in the various courses much more frequently than would be the case if a one-year general book course in agriculture was given first in the high school. The best place for such a general course would seem to be in the seventh and eighth grades, thus developing an intelligent interest in the subject which will often carry pupils over into the high school in order to take the more specialized instruction there offered.

All the agricultural courses as outlined here and in the Secondary Syllabus, are to be supplemented by textbooks, reference books, bulletins, farm papers, essays, excursions, and demonstrations, to the full extent of the ability of class and teacher. Naturally this supplementary and connective work will be more varied, thorough, and effective under the direction of the special teacher in the vocational courses than can be expected from an academic teacher without agricultural experience or training. But academic teachers of the subject are encouraged to do all the work outlined as thoroughly as their experience and preparation will permit.

To assist teachers in developing improved plans of teaching the various topics included in the agricultural courses, and to encourage a more effective and significant correlation between the industrial and the so-called cultural subjects of high school study, the Education Department purposes to send as regularly as possible to the
schools interested a series of outlines, suggestive questions, and other aids in promoting a better understanding of the aims and values of vocational instruction. To all high schools teaching agriculture the Department also recommends the purchase and use of special reference books in agriculture. These are known respectively as the "Fifty-Dollar List," containing twenty-five selected books, and the "Hundred-Dollar List," including thirty-two additional books.

State Aid for Vocational Courses in Agriculture

In the New York system of agricultural education here sketched in its larger outlines, the direct aid of the State is given to the local high school, both by special supervision and advice and by financial aid to districts that establish the vocational courses. The requirements are, in brief: (1) that a special teacher approved by the Education Department shall give his time exclusively to vocational instruction; (2) that not less than twenty-five students giving five-twelfths of their time to such studies shall be enrolled in the vocational course; (3) that certain provisions shall be made for needed rooms, apparatus, and books; (4) that an advisory agricultural board of five members shall be appointed; and (5) that the vocational course and its necessary requirements shall be authorized at a public district meeting.

When a course is so organized in any union school or high school, the State will pay into the district treasury five hundred dollars annually if one special teacher is employed, and two hundred dollars for each additional teacher engaged in vocational instruction for thirty-eight weeks during the school year. A regular high school certificate of graduation, sanctioned by the Education Department, is granted to students who complete four years of such vocational study; and a "junior" certificate to those who complete two years' work beyond the six years of elementary school training.

This scheme of state-aided high school instruction in vocational agriculture and related subjects is in experimental development in a few schools this year and will probably be in full operation in the fall of 1911.

THE NEW AGRICULTURAL GIG

By W. H. Hook, '12
Captain Agricultural Crew

Intercollege rowing in Cornell University began in the spring of 1906. At that time Agriculture, Law, Arts, Architecture, Mechanical Engineering, Civil Engineering, and Veterinary were represented by crews. The Veterinary College has since dropped out. Practice on the machines in those days began but a few weeks before the race and was continued until the contest was five or six days off. Then for this short time the various crews were crowded into the Varsity boat-house. Conditions were very congested as can easily be imagined. A portion of the North boat room was screened off by a piece of canvas to serve as a dressing room for all the crews. It became at the rowing hour a greater chaos of clothing than the ordinary kitchen closet, while the act of dressing was an unwritten science. No baths were provided.

The gigs were good crafts but limited to two. The oars, however, were of course the old and abused implements discarded by the Varsity. Little coaching, if any, was given the crews. Practice apparently aimed to develop ability to stay in the boat and dip the oar occasionally.

The resulting race, as might be expected, was a very amusing spectacle; not exactly a burlesque because the men were seriously trying to do their best. On the other hand it was far
AGRICULTURAL CREW IN PRACTICE.

from a systematized well organized effort. Some say that it amounted to little more than a "crab" catching contest, with the course an organized fishing ground.

Now the intercollege crews have a fine new concrete and plaster boat house of their own, with two large dressing rooms, shower baths of hot and cold water on the second floor; with a large boat-room below containing two gigs, the gift of the Cornell Athletic Association to the Intercollege Rowing Association. Moreover, the good spirits among the faculty and students decided that we Ag's ought to have a "gig" of our own to encourage such a healthful sport. So, in the year 1910, a subscription was started and enough money raised to guarantee the venture of building the boat. It was to be ready for us at the Decoration Day Regatta last year, but owing to delays in supplies was not finished. However, our crew of that year in appreciation of the good work started, went ahead and won the race just the same.

This season, we are using the new boat and new oars daily. My, but it is a grand equipment. Hiawatha's birch bark canoe never had stronger lines or balanced better than the new gig. She goes through the water as straight and true as an ocean liner. We, of the crew, realize with overwhelming force, that we have the boat and the oars, so now "its up to us."

At the present writing, May 15th, all good omens and the lack of bad ones point toward another victory for Agriculture. The new men by practice on the water since about April 15, under two intercollege coaches, have got beyond the point where the gig feels the size of a cigar-box and the oar appears to have the dimensions and weight of a telephone pole. Some of the men have developed joints at the elbows and wrists while others who really had these joints before find new articulations for them of which they never dreamed. Strange to say, the new men have also discovered that all the movements of which their backs and waists are capable, are not necessary in the boat. They find they shouldn't flopp up and down like the ear of a fox hound in the run; it's a systematic movement, like the pricking up and laying back of horses' ears or the inverted motion of a pendulum.

The old men have their sea-legs on again to the extent that with the aid
of the new men, they can walk away from most anything including Prof. Wing's launch which he kindly loaned us to aid in coaching our crew.

But with all the satisfaction and good training derived from the new boat and oars, there comes the humiliating thought that they are not paid for, and we who use it feel this fact keenly. There is yet $350.00 to be raised before we can use it without embarrassment. Toward the initial cost of $600.00 our Dean with his usual interest in outdoor sports gave $25.00. The rest of the faculty generously contributed $66.50, the student body raised $130.00, while the class of 1912 donated $10.00 from their treasury. As yet none of the alumni outside of the faculty and the class of 1910 have showed their interest in this most beneficial sport of the Agricultural College by contributions towards our new gig.

The Mechanical Engineering College which is now building a gig to be payed for by subscription has far outstripped us in the amount raised although they started but last fall. This advantage is greatly due to the help of the alumni, one individual giving at the start $100.00 and promising $165.00 more if the college could raise an equal amount by the close of this term.

Perhaps our alumni and others have not had the opportunity presented to them. Let this not be the excuse any longer. The writer as a member of the crew and chairman of the "Gig Fund Committee" will be glad to acknowledge the receipt of any amount however small or LARGE. Who will lend a hand?
The Cornell Countryman

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JUNE, 1911

Your Activity

In the initial number of THE CORNELL COUNTRYMAN, Professor G. F. Warren, who in his student days was the first editor-in-chief, set forth the following policy for the paper: "To keep the former students in touch with each other and with the college, and to present the advances in agriculture." The continued success of the COUNTRYMAN in the seven succeeding years is, we believe, sufficient proof of the soundness of the policy to warrant its continuance in the future. For this reason special emphasis will be given next year to the former student notes and to the various activities of the college which should be of vital interest to our readers.

As the new board takes up the work of the COUNTRYMAN for next year, we wish to take this opportunity to express our gratitude to the retiring board for work well done, and for their assistance in getting the paper started for next year. In this we believe we voice the sentiment of the entire student body of the College. By maintaining the paper merely as a "floating proposition" another year has been ended free from debt. So long as this policy is continued, namely that of work being done, for neither remuneration nor credit, but merely for the interests of the paper, the future of the COUNTRYMAN is assured.

With the start of another year, we want you as a student of the College of Agriculture to feel more than ever that the COUNTRYMAN is your activity and that from you must come ideas and suggestions if your paper is to reach its highest development. Drop into the office and talk things over; develop that same "Ag" spirit which has again brought that trophy cup for the athletic series back into our camp. Your help will mean the difference to the COUNTRYMAN between keeping pace, and setting the pace.

The Trophy Room

Judging by the keen interest which the students this year have shown toward the new Trophy Room, its innovation has proven a success, and its future maintenance is assured. Pictures of the various athletic teams and musical clubs of the college well fill the room, prize banners adorn the walls, and if next year proves as successful as the present one, a new shelf will have to be added to the cup cabinet. The illustrations, pp. 351 and 353, show the various cups won this year which are as follows:

1. Sweepstakes Trophy—presented by the National Dairy Club Association; won 1908, Iowa State College;
1. Silver Cup—Intercollege Cross Country Race.

2. Silver Cup—Intercollege Cross Country Race.

3. Morrison W. C. Debate Trophy—won '07-'08, General Agriculture; '08-'09, Dairy Industry; '09-'10, Poultry Husbandry; '10-'11, General Agriculture.

4. Silver Cup—Awarded by the American Jersey Cattle Club annually for first prize in judging Jerseys at the National Dairy Show. The College winning it three times may keep the cup permanently. Won, 1908, University of Nebraska; 1909, Cornell; 1910, Cornell.

5. Hoard's Dairyman Trophy—awarded for first place at the National Dairy Show. Won, 1908, Iowa State College; 1909, University of Nebraska; 1910, Cornell.

6. Silver Cup—Intercollege Regatta presented by John H. Barr, '89. Won '06, Civil Engineering; '07, Civil Engineering; '08, Arts; '09, Civil Engineering; '10 and '11, Agriculture.

7. Silver Cup representing the style of milk cans in use on the Island of Guernsey—Presented annually by the American Guernsey Cattle Club at the National Dairy Show. Won '08, Iowa; '09, Minnesota Univ.; '10, Cornell.
CAMPUS NOTES

FIRST IN COLLEGE SEASON FOR 1910-11

The completion of the Intercollege crew races and the Intercollege baseball schedule give the College of Agriculture the championship of the University in athletics. Mechanical Engineering comes second and Civil Engineering third. The totals:

College of Agriculture .......... 58
Mechanical Engineering .......... 41
Civil Engineering .......... 38
Law ............................. 30½
Arts ............................. 23
Veterinary ........................ 18½
Architecture .................... 13

Agriculture won both of the final sports of the season, crew and baseball. The points from crew were distributed as follows: Agriculture, 10; Law, 7; Arts, 5; and Mechanical Engineering, Civil Engineering, and Architecture all tied, each receiving 2½ points.

It has become necessary to take up the old school-garden because the auditorium is to occupy its site. A new school-garden is being made just to the east of the Animal Husbandry building. The eastern half is already planted. The western half is to occupy the site now taken by the Girls' Tennis Court; but this will not be planted until another year, when the Tennis Court can be removed to the neighborhood of the new Home Economics building.

It is possible that a rural school-house may be placed just at the north of this school-garden and centering on the central walk running to the south.

Among those elected to Sigma Xi at the annual meeting held on April 29, were the following from this college: Prof. G. W. Cavanaugh, Prof. H. E. Ross, W. C. Beal, G. J. Bouyoucos, H. B. Frost, C. N. Jensen, M. M. McCool, and W. R. Thompson.

Bulletin 295, on the Agricultural Survey of Tompkins County was recently issued. The purpose of this survey was to study the Farm Management.

The report of the Florida meeting of the American Pomological Society, which was held in February, 1911, has just come from the press. It is edited by the secretary of the Society, Professor Craig, and comprises a volume of about 300 pages. This volume is largely dedicated to the citrus fruit interests of the country.

Co-operative field tests are in progress with the National Sweet Pea Society. Experiments are being carried on at Ithaca, and at Garden City, L. I. The first report of this work is now in press.

The Department of Horticulture is cooperating the American Gladiolus Society which was formed last year, in making a study of the varieties of gladiolus.
Prof. Wing responded to a toast at the annual banquet of the American Jersey Cattle Club held in New York City, May 3.

The Animal Husbandry Department reports a considerable addition to livestock in the horse department. Two pure bred Percheron mares have been purchased and six or eight colts have arrived at the college barns.

The First Educational Scoring Contest for Butter, Cheese and Milk was held May 25. The contest was for the benefit of former winter-course students in Dairy Industry. Samples of milk products sent in from all parts of the state were scored and criticized by the judges of the contest.

The Crown Cork and Seal Co., has loaned to the Dairy Department a new capping machine for putting caps on milk bottles. Metal caps which entirely cover the tops of the bottles and which are much more sanitary than the old-fashioned pasteboard caps, are used.

The annual meeting of the New York State Ginseng Growers' Associa-

tion was held here, April 26 and 27. Professors Fippin, Duggar, and Whetzel of the College of Agriculture, and Mr. H. L. Watson, of Newtown, Pa., spoke at the meeting. In addition, there was an extensive exhibit of photographs showing different diseases of the crop, and specimens of diseased roots.

Mr. Manning, heating engineer from the state architects office, was here on May 3, looking over the ground and plans of the new Agricultural buildings.

Mr. Lewis, of Green & Wicks, the Buffalo architects in charge of the new buildings has also visited the College to look over the ground.

The Poultry Association was addressed by Prof. Rogers on Tuesday evening, April 25th. The lecture was on his recent visit to Western poultry farms.

The following games have been played in the intercollege baseball league: Ag. 6—Grads. 5; Law 9—Ag. 3; Ag. 12—Arts 2; Ag. 12—C.E. 2 Ag. 9—Vet. 3; Ag. 9—M. E. 0; Ag. 18—Architecture 2.
An article, by Professor Ross, recently appeared in the *American Agriculturist* on "The Use of Hand Separators on the Farm."

* * *

Professor Stocking recently served in New York, as member of a commission to consider the establishment of bacterial standards for market milk.

* * *

The Dairy Department is testing the accuracy of a new method of determining the number of bacteria in milk. The new method is very simple and if accurate will be much used. It is based on the decolorizing action of bacteria on methylene blue. Milk and methylene blue are mixed and kept at a constant temperature until the color disappears from the blue. The number of bacteria in the milk is directly proportional to the time it takes for decolorization to take place.

* * *

Professor Ross has prepared a bulletin on "The Cell Content of Cow's Milk," which covers the results of two years' work.

* * *

Prof. Gilbert spoke before the Grange at Hall, N. Y., on May 13.

* * *

C. O. Dalrymple, '12, is at New-town, Penn., studying to become a ginseng specialist.

* * *

R. S. Nanz, '12, is assistant in Plant Pathology at the Iowa Experiment Station.

**SUMMER DEPARTMENTAL PLANS.**

*Summer Plans for the Department of Entomology*

The Department of Entomology is planning work this summer along many different lines. A study will be made of onion thrips at Williamson, N. Y. The work of the Bethany-Batavia Fellowship at Batavia will also be carried on. In Ithaca, work will be done on the life history of an apple pest and war will be waged on the elm leaf beetle on the elms of the campus. Another important line of work is the cooperative spraying experiments on the control of the red bug throughout the state. The experiments on the external parasites of poultry, which are being carried on in conjunction with the Poultry Department will also be of interest to many.

* * *

*Summer Plans for the Department of Pomology*

The work of planting the Pomology grounds will be continued. The apples and pears were planted last spring. Plans for the remaining fruits are already completed, and most of these fruits will be planted this fall.

The new grounds offer excellent opportunities for experimental work and the Department is starting experiments on:

(a) Stocks for different fruits and varieties.
(b) The value of pedigree stock.
(c) Methods of pruning.

The Department of Pomology, in cooperation with the Department of Plant Pathology, is conducting a spraying experiment to control the anthracnose of raspberries.

* * *

*Summer Plans for the Department of Horticulture*

The field work in the Department of Horticulture will consist of cooperative experiments with growers of special vegetable crops on muck lands in western New York. Two sets of experiments have already been established on celery, onions, and lettuce at South Lima, N. Y., and Batavia, N. Y. In addition a vegetable survey of the state that was begun last year will be completed. A greenhouse survey will also be made, investigating the amount of capital invested in greenhouse equipment throughout the state. This survey will also include the area of glass, the crop grown, the methods of culture and the type of
labor employed. These many activities of this department will undoubtedly be of great benefit to the horticulturists of the state.

* * *

Summer Plans for the Department of Farm Management

This department will put together in bulletin form the data already gathered in the survey of Livingston County. If money is available, another survey will be made of some dairy section in the state. The purpose of these surveys will be to determine what factors go with success in farming.

* * *

Summer Plans for the Department of Soil Technology

The Department of Soil Technology will make a large number of important experiments on the experimental farms this summer. The following tests will be made:

1. To determine the influence of certain plants on the presence of nitrates in the soil.

2. To determine the relation of the form of soil nitrogen to its utilization by plants.

3. To determine the loss of calcium and other bases in drainage water from soils.

4. To determine the relative effectiveness of calcium compounds and the degree of fineness of ground limestone in correcting the lack of basicity in soils.

5. To determine the methods of manuring for hay crops.

A soil survey of Jefferson County will be made this summer in cooperation with the United States Department of Agriculture.

* * *

Summer Plans for the Department of Plant Pathology

Prof. Donald Reddick, of the Plant Pathology Department, is supervising this summer, the work of numerous field laboratories throughout the State. Dr. Errett Wallace is in charge of the laboratory at Albion, where Mr. Evans is assisting him in determining the fungicidal value of iron sulphate. Mr. C. P. Smith, of the Utah Agricultural College, is also working with Dr. Wallace on peach and apple diseases. Messrs. C. N. Jensen and F. M. Blodgett, Hermanfrasch Fellows, are at work in field stations; Mr. Jensen, with C. D. Scherbakoff, '11, are studying potato diseases at Atlanta, N. Y., and Mr. Blodgett is investigating the effect of sulphur on foliage.

Mr. V. B. Stewart, with Messrs. Massey and Weiner, of Wabash College, is at work on nursery diseases in nurseries at Seneca Castle and at Honeoye Falls.

Messrs. George Osner and R. W. Brawker, Bethany—Batavia Fellows, are studying apple pests at the Batavia Station. At the Romulus Grape Station, Chas. T. Gregory, assistant in Plant Pathology, is located.

L. R. Hessler, Byron Fellow, is at Byron Center, combatting the apple canker. At Williamstown, J. C. Jaggar, Willis P. Rogers Fellow, is at work on onion and celery diseases. At Hudson, P. J. Anderson is investigating cement dust injury to foliage and fruit.

J. Rosenbaum, is collaborating with the United States Bureau of Plant Industry in the control of ginseng diseases.

R. A. Jehle, Plant Pathologist for the town of Newfane, is also working with the Plant Pathology Department in studying peach diseases. At New Paltz, W. H. Rankin, John Davy Fellow, is working on chestnut bark disease.
WE are glad to announce the advent of a new magazine to our agricultural press. "The Progressive Eastern Fruitgrower," now published at Rochester, N. Y., has a worthy purpose, as it intends to "boost" eastern fruit, and further cooperation among fruit growers. Dean Bailey, and Prof. C. S. Wilson of the Department of Pomology are members of the advisory board of editors.

NEW YORK EDUCATIONAL MONTHLY JUDGING OF DAIRY PRODUCTS

The fourth year of the New York Educational Monthly Judging of Dairy Products will begin the last week of May. In the previous three years there were only six monthly scorings. This year there will be a monthly judging through the entire year of milk, cream, butter and cheese.

In butter there will be two classes, creamery and dairy. This is the first year that there has been a separate class for dairy butter. There will also be a class for milk and cream. Each product will be scored and the following analyses made; butter for moisture and salt, cheese for moisture and butter-fat, and milk and cream for butter-fat, total solids, acid and number of bacteria.

The markets are constantly calling for a more uniform and higher quality of dairy products. Very often difficulties are experienced in the care of milk and cream or in the manufacture of butter and cheese that might easily be overcome by a change in the methods. It is the aim of the New York Educational Judging of Dairy Products to not only offer suggestions for improvement but to aid the dairymen to be better judges of their products.

Just now there is a great deal of worry on the part of the farmer who is making butter and also the creamery man because of the enforcement of the federal ruling regarding the moisture content of the butter. A number of dairymen have been taken to task because their butter contained too much moisture. When this regulation was first passed the creamery men shipping to the large butter centers were the ones to suffer. Now the federal government is inspecting farm made butter. To a certain extent it is a good thing for the farmer because it will bring him to a more careful study of his butter and probably a greater overrun will result. The time is coming in the near future when every butter-maker must use a moisture test. The past has proved that the moisture analysis of the butter at our scorings are very helpful to the maker who uses a test as a check on his own analysis; and also to the person not having a moisture determining outfit, for it gives him an idea as to the amount of water in his butter.

The products will be judged by members of our staff assisted by outside judges furnished by the New York State Department of Agriculture. These men, as far as possible, will be gotten from the markets, for our ideals must be the market ideals. After the products have been judged, the reports concerning the handling or the manufacture will be examined and suggestions for improvements made.

Many dairymen send samples of their products to us for examination. Probably there are others who would like to have us inspect their goods. There will be no better time to send these articles of the dairy to us than on the appointed date of the Educational Monthly Judging of Dairy Products. It is not necessary that a person enter with the idea of winning a diploma of merit only, although we hope that the larger per cent of the entries will be for the entire year; but he may send a sample to just as many of the monthly judgings as he chooses. The advantage of making a regular entry, even, though it may be for only a few months, is that we will have an opportunity to send him a report.
blank which calls for the information that we need in order to offer helpful suggestions.

We are planning to have a "round-up" meeting during Farmers' Week at Cornell University next winter. At this meeting all persons who have sent one sample or more to the New York Educational Monthly Judging of Dairy Products will be given the privilege of examining the products with the judges. At this time there will be conferences for the dairymen interested in milk and cream, butter and cheese.

* * *

THE 1910 YEARBOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

The seventeenth volume of the Yearbook, (1910), will soon be issued by the U. S. Department of Agriculture. In appearance and make-up it differs but little from its predecessors; it contains 28 articles, 49 full page illustrations, of which eight are colored, and 31 text figures.

The Department's appreciation of the service of the late Senator Jonathan Prentiss Dolliver rendered to agriculture during his public career is expressed in the selection of a portrait of him as a frontispiece.

The Fourteenth Annual Report of the Secretary, for the fiscal year ended June 30, 1910, occupies the first 156 pages and gives the "general report of the operations of the Department," which, under the law, must form a part of the volume. This report, supplemented by the statistical matter found in the appendix, gives a more complete and comprehensive summary of agricultural conditions in the United States than can be found in any other single publication.

The next 320 pages, divided between 28 articles contributed by many members of the scientific force of the Department, contain data upon many of the important questions now prominent in the public eye, and equally vital to the agricultural and urban population both as producers and consumers of the food stuff of the nation.

The importance of the forests to the residents of the country and the prominence of that subject in Department work is reflected in four papers, namely, The Management of Second-Growth Sprout Forest, Progress in Saving Forest Waste, Fire Prevention and Control on the National Forests, and Injuries to Forests and Forest Products by Roundheaded Borers.

Settlers in many parts of the West will be interested in the two papers relating to The Agricultural Duty of Water, and Mountain Snowfall Observations and Evaporation Investigations in the United States, while everyone will be interested in the two articles, one on the Progress and Present Status of the Good Roads Movement in the United States, and the other, describing the Use of Bituminous Dust Preventives and Road Binders.

Those engaged in Animal Husbandry will find the discussion of Some of the More Important Ticks of the United States most timely, and the paper on the Eradication of Cattle Tuberculosis in the District of Columbia will not only engage the attention of those directly benefitted by that accomplishment, but will encourage other communities to renewed efforts for greater success in the same line.

That the general farmer, the fruit grower, the trucker, and the grower of special crops hold a deservedly large space in the thought and activities of the Department is demonstrated by the nine papers on Supply and Wages of Farm Labor; Nitrogen-gathering Plants; Insect Enemies of Tobacco in the United States; Increased Yields of Corn from Hybrid Seed; The Utilization of Crop Plants in Paper Making; Co-operation in the Handling and Marketing of Fruit; Precooling of Fruit; Camphor Cultivation in the United States; and the illustrated article on Promising New Fruits of the Year, 1910.

The Department does not leave the farm product as soon as produced, but
as its destiny is consumption, articles dealing with the proper, best, and most economical use of farm products as food for man, are furnished. Cheese and Other Substitutes for Meat in the Diet; The Respiration Calorimeter and the Results of Experiments with it; and The Game Market of Today, are separately treated.

As showing what the Department is doing to further progressiveness in the farming communities, and to encourage rural education and the instruction of agricultural courses in country schools, the article entitled Community Work in the Rural High School will be of interest and value.

Among the articles of peculiar interest to dwellers in the larger cities are one on The Value of the Shellfish Industry and the Protection of Oysters from Sewage Contamination, and one on The Inspection of Imported Food and Drug Products.

The Migratory Movement of Birds in Relation to the Weather, Review of Weather Conditions of the Year, 1910, and Seedtime and Harvest; statistics as to the organization and work of the United States Department of Agriculture, the State Departments, and the Agricultural Experiment Stations in the States, complete the new Yearbook.

The volume is distributed principally by Senators, Representatives, and Delegates in Congress, the Department's quota being reserved for its volunteer correspondents.

FORMER STUDENTS

John Henry Comstock, B. S. '74

'74, B. S.—Altho not a graduate of the Agricultural College, Prof. Comstock is an alumnus of the University and has been connected with our faculty longer than any other active member. We feel certain that our readers will be deeply interested in a brief sketch of his life, a knowlege of which should be an inspiration to everyone.

He was born at Jaynesville, Wis., Feb. 24, 1849. The following year his mother was left a widow, and also as a result of financial mismanagement, penniless. As a boy of ten he commenced working for his board and clothes, with the privilege of attending school in winter, at Scriba, Oswego Co., N. Y. Five years later he commenced working as cook on sailing vessels on the Great Lakes during summers and attending school winters. Another winter was spent in the district school at Scriba, one at Mexico, N. Y., and two winters in Falley Seminary at Fulton.

At Falley Seminary, Mr. Comstock commenced the study of Botany, this being continued during his spare moments while on the lakes. While looking for a certain work on Botany in Buffalo, he ran across a copy of "Harris' Insects Injurious to Vegetation," and after much deliberation, exchanged a good part of a month's wages for the book. "Before seeing this volume, he had never given the
study of insects a serious thought, but as soon as he became aware thru its pages that there was such a science as Entomology, he became fully convinced that he would like to devote his life to it."

As Cornell was planning the establishment of a chair of Entomology, Mr. Comstock entered here and was graduated with the class of '74. He worked with the masons on the University buildings; helped to build McGraw Hall, the building in which he afterwards taught for many years. He also worked as assistant to Dr. Wilder in the anatomical laboratory, as janitor, as master of the chimes and in various other ways, thus earning his way thru college.

In 1873, Mr. Comstock was placed in charge of the new department of Entomology, with the title of instructor of Entomology, and lecturer on Invertebrate Zoology. Three years later he was promoted to the rank of Assistant Professor. In the summer of 1878, he worked in the south studying the cotton worm and a year later was appointed United States Entomologist. He discharged the duties of this office so well that two years later he retired with a world-wide reputation. Returning to Cornell he was appointed Professor of Entomology and Invertebrate Zoology, a position he still holds.

In 1878, Prof. Comstock was married to Miss Anna Botsford of Otto, N. Y., a former student at Cornell.

For many years Mrs. Comstock was associated with her husband in his scientific studies being joint author with him of several works. She learned wood-engraving in order to make the illustrations for the "Manual for the Study of Insects," and she acquired such skill that she was made a member of the Society of American Wood-Engravers, membership in which was limited to a small number of the leading wood-engravers. Her work as an engraver was interrupted by the taking up of the work in nature-study in which she is now engaged.

Prof. Comstock is the author of numerous works on both economic and systematic Entomology well known to all students of the subject. He is author of "The Manual for the Study of Insects," which is a standard textbook used in most agricultural colleges; a volume on Insect Life that is widely used in secondary schools; and with Mrs. Comstock a volume on the Butterflies of the Eastern United States. He has just completed a work on Spiders and Allied Animals, soon to be published.

Prof. Comstock has always taken a keen personal interest in his students and his influence in this respect is immeasurable. A self-supported student himself, he has made it possible for many other students to complete their course. In nearly every state in the Union, besides many foreign countries, there are Entomologists of prominence who owe much of their success to training received under Prof. Comstock.

His studies have already resulted in untold benefit to the agricultural interests of the country, and will probably be fully as important to future generations. A self-made man in every sense of the term, Prof. Comstock stands today as the leading Entomologist of the world.

1871, A.B.—"Mr. Romeyn B. Hough has brought out a handy pocket manual which he calls a 'Leaf Key to the Trees of the Northern States and Canada.' The booklet is of such dimensions that it can be carried very easily in one's pocket, its dimensions being 4½ by 6 inches, and not over a quarter of an inch in thickness. In about thirty pages all of the common native trees from the Rocky Mountains eastward, and north of the latitude of North Carolina, are briefly characterized by means of keys which refer principally to their leaves. With this in hand the tyro ought to find no difficulty in finding the name of any native tree in the region named."

—Science. Mr. Hough's address is Lowville, N. Y.
'04, B.S.A.—Walter S. Brown is now located at Corvallis, Oregon, and is president of the Corvallis Orchard Company.

'05, F. E.—William C. Shepard, Assistant Forester of the Pennsylvania Railroad, has removed from Altoona to Philadelphia, with headquarters at the Broad street station.

'07, Sp.—Jay A. Miller was married on March 22d, to Miss Dora M. Saxton at Wayland, N. Y. After an eastern trip, Mr. and Mrs. Miller will reside on a farm near Dansville.

'08, W. A.—Ross C. Mead is now managing the home farm at Newark, Valley, N. Y. He is carrying on general farming with special attention to dairying.

'09, B. S. A.—A. W. Sweeton now has supervision of the sale of milk in the city of Stamford, Conn.

'09, W. A.—Wm. C. Perry is at present located in Virginia with W. J. Toussaint, W. H., '08, who has charge of a 3000 acre, tract of land in that state.

'10, B. S. A.—L. E. Johnston has accepted a position on the Sheffield Farms, Vergennes, Conn. (.)

'11, B. S. A.—David C. Vann, who left college sometime in March, is superintendent of the Letchworth Village Farm at Thiells, Rockland Co., N. Y.

'11, B. S. A.—Thomas E. Elder was married on May 1st to Miss Grace E. Holton at Lyndonville, Vt. "Tommy's" many friends here extend their best wishes to both he and Mrs. Elder. We understand he has charge of the grounds at the Northfield School for the summer and will teach agriculture at this school the coming year. Mr. and Mrs. Elder will be at home after Sept. 15th at Mt. Hermon, Mass.

'10, B. S. A.—B. D. Gilbert, is now employed as assistant in the Soil Survey being made this summer in Jefferson County.

'06, Sp.—On April 24th, 1911, a son was born to Mr. and Mrs. Roy F. Wilcox, of Council Bluffs, Ia.

'11, B. S. A.—W. O. Strong has accepted a position as teacher of agriculture and manual training in the Thorn High School at Millbrook, N. Y.

'11, Sp.—W. H. Holloway is now in charge of the production of sanitary milk on the Georgetown farm of the Connecticut Agricultural College. In Stamford, the milk from their farm sells for fifteen cents, and the cream at one dollar per quart.

'11, W. P.—Leland M. Baum is now manager of the poultry department on the Brook-Hill Farm, Genesee Depot, Wis.

'11, W. A.—E. R. Zimmer was here recently making arrangements to enter as a Special next fall.

'11, W. D.—Wm. F. Huff has been engaged as Assistant Buttermaker in the Dairy Department of the University of Illinois.

'11, W. D.—R. L. Washburn is now managing a new milk plant for the citizens of Bradford, Pa. The purpose of the plant is to supply the city with pure milk. Paper milk bottles will be used exclusively.

'12, Ex.—J. C. Faure has received a special appointment from the U. S. Bureau of Entomology. He will spend the summer combatting insects injurious to citrus fruits, in California.

'11 Ex.—F. H. Lacy has been teaching agriculture in the High School at Tully, N. Y., the present year. He has been very successful in developing an agricultural course there, and has been engaged for another year.

'04, Sp.—H. E. Haslett is farm manager on the farm of Ed. Harding at Plainfield, N. J.

'11, Sp.—Samuel R. Heffron has just taken a position under the U. S. Department of Plant Industry, on the experimental farm at New London, O.
Improve Your Milk

Blue Tag Prime Cotton Seed Meal when fed to your cows will do it.

High-grade Cotton Seed Meal Bears this Blue Tag:

Sold by first-class dealers.

For further information write to

THE AMERICAN COTTON OIL COMPANY

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GUARANTEED ANALYSIS

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<td>Crude Fiber</td>
<td>Not to Exceed</td>
<td>11.50</td>
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You will obtain some very interesting facts regarding roofing by reading this little booklet.

It tells all about the way roofing is made; why some last longer than others. It tells about the different materials used and after you have read it, you will be in a better position to accurately judge of the worth of roofing than before.

The booklet also describes in detail

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"THE ROOF DURABLE"

It tells you about the very unusual guarantee RELIANCE is backed with; the guarantee that relieves you of all necessity of painting or recoating your roof from the very day it is laid.

The booklet is well worth sending for—particularly as no obligation attaches to your request—and you should write now while the matter is fresh in your mind.

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Sole Distributing Agents
IF BACTERIA WERE AS EASILY SEEN AS GNATS

If bacteria were as easily seen as gnats no one would need to tell you how much superior WYANDOTTE Dairyman's Cleaner and Cleanser was to other washing materials. But because bacteria cannot be seen by the unaided eye, and because you have always believed things to be clean that looked clean, you do not appreciate how Wyandotte Dairyman's Cleaner and Cleanser does an immense amount of cleaning that you are apt to overlook.

To every dairyman, be he the owner of one cow, or the owner of many, a dairy cleaner is a necessity and it should be one that will not only remove the dirt and objectionable matter that can be seen, but the invisible bacteria as well.

Ask your dealer for a small sack or order a barrel or keg from your dairy supply house. Give it a trial and know for yourself how well it does what you want done.

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You want a gasoline engine to save work, time, and money for you—to increase your profits. Many engines on the market today are not made right—the material, the principle, or the workmanship is at fault. So they fail of their purpose—or they do not render you enough service to fulfill your expectations. Be careful to buy a good engine—no other kind will pay.

Get an I H C gasoline engine if you want to eliminate all doubt. Thousands of other progressive farmers already own the powerful, durable, economical I H C Engine. All are agreed that it's a big money-maker, a big time and work saver. You will understand why the I H C meets such universal approval when you know that the I H C cylinder construction gives more power on less gasoline—that the I H C style of governing gives steadier power and economizes fuel—that the I H C cooling system prevents deterioration—that in every way I H C construction, principles, and workmanship are simplest, strongest, and best.

An I H C gasoline engine will furnish economical power for many machines in use on your farm and about the house and dairy—the separator, churn, pump, saw, feed grinder, etc.

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I H C engines are made in the following styles and sizes:
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The purpose of this Bureau is to furnish farmers with information on better farming. If you have any worthy question concerning soils, crops, pests, fertilizer, stock, etc., write to the I H C Service Bureau, and learn what our experts and others have found out concerning those subjects.

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OUR New Catalog of Dairymen's Supplies should be in the hands of every owner of a cow. It is filled from cover to cover—contains 87 pages—with valuable information about modern dairy apparatus and utensils.

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We can help you in many ways to bigger dairy profits. Our organization covers the entire country and is in close touch with the latest and best methods of dairying everywhere. Write us freely on any subject connected with dairy equipment and methods.

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<th>Picture Framing</th>
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When wanting QUALITY, SERVICE AND CLEANLINESS go to WANZER & HOWELL, The Grocers

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<tr>
<th>PICTURES</th>
<th>PICTURE FRAMES</th>
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<tr>
<td>STUDENTS' FURNITURE</td>
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<table>
<thead>
<tr>
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<tr>
<td>222 North Aurora Street</td>
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<tr>
<td>430 North Cayuga Street</td>
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Fresh, Salt and Smoked Meats  
Poultry and Game in Season

D. S. O'BRIEN
Growers’ Special Price List

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<table>
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<tr>
<th></th>
<th>Pulverized Manure</th>
<th>Shredded</th>
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<tbody>
<tr>
<td>In Bags</td>
<td>Sheep</td>
<td>Hog</td>
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<tr>
<td>100 lbs.</td>
<td>1.50</td>
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<td>200 lbs.</td>
<td>6.00</td>
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<tr>
<td>1,000 lbs.</td>
<td>11.00</td>
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<td>2,000 lbs.</td>
<td>18.00</td>
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F. O. B. Chicago, Ill.

Pulverized Manure Shredded

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<tr>
<th></th>
<th>Sheep</th>
<th>Hog</th>
<th>Cattle</th>
<th>Cattle</th>
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<td>6.00</td>
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<tr>
<td>1,000 lbs.</td>
<td>11.00</td>
<td>11.00</td>
<td>9.50</td>
<td>8.00</td>
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<tr>
<td>2,000 lbs.</td>
<td>18.00</td>
<td>18.00</td>
<td>15.00</td>
<td>14.00</td>
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F. O. B. Buffalo, add 22¢ per Hhd. lbs. freight. Always carried in stock.

Pure Bone Meal, 105 lb. bags, $2.00 per 100 lbs. $3.50 per ton.

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ONLY ONE OF ITS KIND IN TOWN
COSTS NO MORE THAN THE OLD WAY

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146-148 E. STATE STREET

WE DO YOUR MENDING FREE

**FOREST CITY LAUNDRY**

E. M. MERRILL 209 NORTH AURORA STREET

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<th>PETER SCUSA</th>
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<tr>
<td>THE BOOL FLORAL CO.</td>
<td>Modern Shoe Repairing</td>
</tr>
<tr>
<td>215 East State St., Ithaca, N. Y.</td>
<td>Have your old shoes made like new. $1</td>
</tr>
<tr>
<td></td>
<td>Best oak sole and heels, sewed.</td>
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<td>Work Guaranteed</td>
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Cornell Library Building
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It Will Interest

Ag. Men to look up our new rebate system 5%. No prolonged dividends, but a definite rebate on every cash purchase.

This plan is in use at all our stores and will save you the price of many a book and article this fall.

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The ordinary half-tone engraving may be good enough for the poultry man who handles cheap stock, but cheap cuts never were and never will be of the slightest use to the man who wishes to do a first-class business in high-grade poultry.

We wish to call the attention of the readers of the Cornell Countryman to the accompanying cut. We have earned the reputation we enjoy of putting the finishing touch of Quality on the half-tone plates we make. Quality cuts sell the goods. Correspondence solicited.

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WITH 3 1-2 HORSE POWER, 4-CYCLE ENGINE.

It supplies 10 nozzles at a pressure of 200 lbs. with safety valve blowing off, and this service can be increased without overtaxing the engine.

A complete spraying rig.

It will meet all your requirements.

It will refill the tank, saw wood, grind feed, run your repair shop, shell or clean your grain, run the cream separator or the churn, and is safe, simple and satisfactory.

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(Application for entry as second-class matter at the post office at Ithaca, N. Y., pending.)

These publications include the annual Register, for which a charge of twenty-five cents a copy is made, and the following publications, any one of which will be sent gratis and postfree on request:

General Circular of Information for prospective students,
Announcement of the College of Arts and Sciences,
Courses of Instruction in the College of Arts and Sciences,
Announcement of Sibley College of Mechanical Engineering and the Mechanic Arts,
Announcement of the College of Civil Engineering,
Announcement of the College of Law,
Announcement of the College of Agriculture,
Announcement of the Medical College,
Announcement of the New York State College of Agriculture,
Announcement of the Winter Courses in the College of Agriculture,
Announcement of the New York State Veterinary College,
Announcement of the Graduate School,
Announcement of the Summer Session,
The President's Annual Report,
Pamphlet on prizes, samples of entrance and scholarship examination papers, special departmental announcements, etc.

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The Registrar of Cornell University

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L. H. Bailey, Director.

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<table>
<thead>
<tr>
<th>Number</th>
<th>Capacity</th>
<th>Weight</th>
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<tbody>
<tr>
<td>25D Steel Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
</tr>
<tr>
<td>26D Chilled Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
</tr>
<tr>
<td>25D-16 Steel Mouldboard</td>
<td>8 x 16</td>
<td>115 lbs.</td>
</tr>
</tbody>
</table>

These are only three of the big Eddy line of popular plows, which includes the Eddy Sulky Plow. Write today for catalog. It is free and will surely interest everyone desirous of owning the very best in plowdom.

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(Signed) GEORGE A. DREW, CONN.

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<table>
<thead>
<tr>
<th>Shredded</th>
<th>Pulverized Manure</th>
<th>Shredded</th>
<th>Pulverized Manure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>Hog</td>
<td>Cattle</td>
<td>Sheep</td>
</tr>
<tr>
<td>100 lbs.</td>
<td>$1.50</td>
<td>$1.50</td>
<td>1,000 lbs.</td>
</tr>
<tr>
<td>500 lbs.</td>
<td>6.00</td>
<td>5.00</td>
<td>2,000 lbs.</td>
</tr>
<tr>
<td>1.00 lbs.</td>
<td>1.35</td>
<td>9.50</td>
<td>5.00 lbs.</td>
</tr>
</tbody>
</table>

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All Important Cream Separator Patents Controlled by De Laval Company

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