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IN MORRILL HALL
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**SUBSCRIPTION PRICE, $1.00 PER YEAR**
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Copyright by The Cornell Countryman
We have all come back to work. There is no excellence without labor. One cannot dream himself into either usefulness or happiness. Every person needs the dream, if he is to be sensitive to his place in the world and if he would really accomplish; but the result comes only through good application.

I hope that all of you have had a busy summer. It is now much the practice to waste the summer. Vacations often result in more harm than good because they are likely to be vacant. The most effective men do not too often break training, although they may change their work. The real farmer does not waste much time in idle vacation; and in this respect he is contributing good example to all our people. Zealous work is good vacationing.

So, if you have not droned your summer away, you will come back keen for work and you will easily find yourself usefully occupied. The quality of your work, as also your healthfulness and satisfaction in it, will depend largely on the way in which you organize your time. If you play, you will have a time for play and you will play with spirit. You will study without haste and without friction if you order your work well. I find that most students who complain of lack of time do not know how to economize time. Their days are unplanned and, therefore, lack progressive motion. Very few students really know how to study. The busiest persons usually have the most time: they work quickly, surely, lose no motions, and overlook the non-essentials. Very many persons lose their way because they get flurried. They “flare up” and are then “upset.” All good work depends on an even temper. One can acquire a level spirit, if he does not chance to be born with one: it is merely self-control. In fact, I think the most effective evenness of keel is one that is held in turbulent seas. I suggest that each student give himself lessons this year in the gentle art of keeping cool. Many troubles solve themselves if they are let alone.

I like to emphasize the time-element in education. We think of this as a high-strung and rapid age; but it need not be a hurried age.
One may walk very fast without being in a hurry. In college, particularly, do we need to take time. Things must soak in now if they ever are to soak in. If I could be sure that the student would take proper time and patience with his work, I should be glad to see the amount of subject-matter reduced by one-half. Education is a process of ripening. One does not have equal opportunity for ripening after he leaves college.

The student in agriculture in these days is fitting himself for a great work. The burden of civilization will fall more and more on the man who produces the supplies out of the earth. We begin to see the end of the process of merely appropriating the supplies that lie in new and untried places. The attention of the people is being halted to this act, and also to the necessity of reaching effectively the social and educational and immaterial needs of the background of our civilization. We have been talking much about marginal men; but it is more important that we talk about bottom men.

Students in agriculture are doing much more than fitting themselves to follow an occupation. They are to take part in a great regeneration. This regeneration will come gradually and perhaps even slowly; and this is all the more reason why it will be worth while to be connected with it. Rural civilization will express itself in the voice of the people. So you are coming here to take part, and to assume a hopeful responsibility. I want you to have the steady forward look.

Your college days should be a conscious preparation for this larger usefulness; you should be ready when the time arrives for your commencement of it. The small college world, even though an ideal world, should typify in some degree the world of wider service. Your first duty is to your formal studies, but it will not be worth your while to come to college if you acquire only subject-matter. I hope you will work with your fellows on questions of student interest, take active part in the affairs of the college, and train yourselves in good public spirit. Loyalty to an institution is a kind of patriotism; when it expands it becomes loyalty to a neighborhood, a state, a nation, and to humanity.

You are now in training to enter the fraternity of those who are building a sufficient country life.
WHEN Central New York was first settled the forest clearings needed fences to protect the pioneer farmer's crops from wild beasts. Domestic animals needed this protection also for it was not safe to let them run at large. Timber was plentiful, if not an actual encumbrance to the land. Some of it was split into rails for the old "worm" fences which are now disappearing. The stumps of shallow rooted trees like pines where hewn off on one side and dragged into rows to serve as fences. Where stones were so abundant as to hinder cultivation, they were often piled between and around the stumps and in the rail fence corners. That was the quickest way of getting rid of them. If the stones were of suitable size and shape they were often built into a wall without mortar.

Stone walls built from boulders are now to be found tumbled down into mere heaps and ridges of stone. Rail fences have decayed, leaving a wealth of brush and weeds and perhaps piles of small stones. The stump fences have resisted decay, but are now disappearing, leaving brush and stone-piles to show where once they stood. With the increase in labor cost and decrease in the timber supply some effort was made several decades ago to economize material in rail fences. The use of iron wire made it possible to fasten stakes and rails together into a modified form of rail fence. Such fences were sometimes built from older ones using what was good of the old fence. It required less material, was straighter and occupied less space on the land. The mortised post and rail fence represented another attempt to economize timber and secure a narrower fence. Board and post fences came into use after the introduction of power saw mills. Board fences are neat and give but a small opportunity to harbor weeds and brush, but they catch the wind and when the posts decay at the ground line or are lifted by freezing the fence is soon out of repair or blown down.

When iron fence wire came into use it was used to some extent woven with wooden slats or pickets. The factory made slat fence had three turns in the wire strands between slats. The slats were sawed and nearly uniform in thickness, and as a result of this, they failed to stay in place in the fence because the wire had no elasticity. Another kind was built where the fence was to remain, using split pickets which varied in size, but giving each pair of wires a half turn only between pickets. These fences did not lose their pickets so easily. The resistance to the wind of all picket fences was a disadvantage. High snow drifts often piled up on the sheltered side, then the slats decayed as did also the posts and the fence went down.

Wire fences came into use most rapidly in the treeless regions of the western States. The eastern farmers adopted wire fences more slowly because their farms were already fenced with wood or stone. When barbed wire was first used some costly lessons had to be learned. Valuable animals were seriously injured by becoming entangled in it. A particularly cruel form of it consisted of a ribbon of galvanized iron about three-eighths of an inch wide on which were clasped double pointed barbs which resembled saw teeth. Such a fence was dangerous to horses and cattle turned against it. Another form consisted of a twisted iron ribbon, the edges of which were cut to form small points. The use of diamond-shaped barbs on wire twisted from two strands and all coated with paint was tried also. This kind rusted badly and inflicted damage enough if not able to cut deeply. More humane forms of barbed wire came into use and attempts were made to build fences by using alternate strands of barbed and smooth wire in the same fence. With posts one rod or farther
apart it was found impracticable to keep cattle and sheep from reaching through the fence built partly or wholly of smooth wire. Sheep, particularly, on account of their wool had little fear of such a fence. Some cattle have such thick hides that the points on a humane barbed wire cause them very little annoyance. As for swine, it is said that a hog will go wherever he can get his nose through, mindless of scrtatches from wire or thorns. Some attempts were made to make such fences more effectual by fastening upright wooden or wire stays to the line wires and close enough together to prevent spreading the wires apart. Fence manufacturers devised stiff vertical wire stays which were securely fastened to the horizontal wires of a fence. This method made fences more expensive and not altogether satisfactory.

Galvanized woven wire poultry netting has been in use for over twenty years. Its success led to the use of light forms of woven wire for farm fences. Fences woven from soft iron wires of small sizes have insufficient strength and elasticity for restraining the larger farm animals. The manufacturers saw that if they could make a fence strong enough and cheap enough for farm uses it would become popular. They had to use steel instead of iron to get the strength and elastic quality. The steel wire was coated with zinc before woven but if the normal amount of zinc coating remained on the wire after it left the spelter bath, it was cracked by the bending process in weaving and purchasers objected to that. To overcome this, the manufacturers wiped off the hot spelter from the wire just as it left the bath.

Thus the galvanizing process left a very thin coating of zinc on the wire. The fence looked all right when finished and erected and the cost was reasonable, but the users were badly disappointed in its lasting qualities. In some cases the wires rusted to pieces in less than two years. Five years ago complaints about the quality of wire fences were common in the agricultural papers. The United States Department of Agriculture was importuned to investigate the subject and Professor A. S. Cushman of the Office of Public Roads undertook the work. Fence users charged that the steel wire was of inferior quality and that the galvanizing was worthless.
The manufacturers replied that they were using the best wire they could get, that the farmers demanded cheap fences and were not willing to pay the price for better fences. The experiments made by Professor Cushman and the results of observations on fences in use have made these facts apparent:* (1) Improvement in the quality of steel used for fence wire was possible. No one should expect, however, that modern steel will resist corrosion as did the iron made years ago. To make fences stiff and elastic, steel wire must be used. Lately some manufacturers are advertising that their fence wire is made of open hearth steel as distinguished from Bessemer steel.

(2) The quality of the zinc coating and its distribution needed improvement. More even and heavier coating with zinc is now possible and buyers of woven wire fences should regard cracking in the zinc coating at the bends of the wire as a sign of honest galvanizing.

(3) The larger sizes of wire carry a relatively heavier coating of zinc. Because zinc is electro-positive to iron, a corrosive agent such as rain-water will destroy the zinc first. The large fence wires are therefore better protected than small ones and it follows that the vertical stay wires should be just as large as the horizontal ones if they are desired to last as long.

(4) Because of the tendency for steel wire to corrode it is not wise to put both hard steel and mild steel wires in the same fence, for the mild steel will corrode more rapidly than the hard steel if they are in contact.

(5) The life of a galvanized steel wire fence can be prolonged by painting it with a special paint which inhibits corrosion.

Various kinds of wire fences are now numerous on the market, but they may all be placed in two classes. In one class are several styles which are sold as coils of line wire and bundles of stay wires with special tools for securing the stays to the tightly drawn line wires. The best of these fences are made of heavy wire and can be expected to give good service if properly set up. Such a fence is well adapted to uneven ground and with special stays can be made quite ornamental in appearance. More time and skill is required to erect such a fence than

*"Information in regard to Fabricated Wire Fences and Hints to Purchasers." Yearbook of the Dept. of Agr. 1909.
when it is already woven, and this adds to the cost.

All farm fences woven at the factory from galvanized wire are in another class. Some manufacturers are now prepared to fabricate fences from wires ranging in size from No. 7 to No. 14 gauge. Most of these fences are made with stays attached at right angles to the line wires but at such distance apart as will best suit the purchaser. These styles can be adjusted to uneven ground by careful work in erecting the fence. A few are made with a triangular mesh. It is impossible to adjust such a fence to uneven ground satisfactorily. The makers of wire fences of both classes have special designs for fences intended to restrain separate kinds of live stock as well as fences intended to turn all kinds. It is not economical to erect a fence having more line wires or stays than will be needed. In view of our present information, farm fences having wires of lighter gauge than No. 9 are not likely to be satisfactory. In many cases it will be found better to use a woven fence of less height than required, completing the fence with one or two strands of barbed wire. The latter is not likely to be harmful on top of the fence and will protect the smooth woven wire below it.

Last but not least, it is very important that the modern elastic steel fence should be drawn very tight and securely fastened to the end posts. No effort should be spared to anchor and brace the end posts very securely. The contraction of the steel wires in cold weather increases the strain on the end posts at a time when the ground is likely to be soft. All corner posts and those wherever the fence changes directions are subjected to stress of a similar kind and should be made fast and firm in the ground. Reenforced concrete end and corner posts moulded in place are desirable because permanent. A decayed wooden line post can easily be replaced but it is more difficult to put a new end post in place when the fence is well secured to it. Steel posts with concrete bases have been used a little but the cost is still prohibitive in regions where there are any forests.

POWERT FOR HOUSEHOLD CONVENIENCES

By H. W. Riley

Assistant Professor of Farm Mechanics, Cornell University

T
HE introduction of the numerous devices now to be found for lightening household labor, marks a distinct advance in the process of reducing the drudgery of housekeeping. This is most accentuated in laundry work, water pumping, sweeping and dish washing. The vacuum cleaner, the washing machine, the wringer, the mangle and the power pump, have made it possible to perform mechanically the first three of these four main types of drudgery. The devices so far developed for dish washing are not so well perfected as are the machines just named, and they therefore will not be considered here.

The main uses of power in the household then are in connection with the water supply, the laundry, the vacuum cleaner, and to this list may be added a sewing machine, a small grinder and polisher and also the cream separator if this is installed in the house.

Having decided upon the purposes for which power is to be used, the next point to be considered is the form or manner in which it is needed. That is, whether it is wanted as reciprocating motion, because on this point depends the type of transmission system to be employed. Pumps for instance, in the styles usually used about the house, must have reciprocating motion at the piston to operate them, but if found convenient rotary motion derived from a moving belt or rope may, by means of a device called a pump jack, be converted into reciprocating motion before being applied to the pump piston rod. Washing machines and vacuum cleaners are regularly put on the market in both forms, some being operated by pulleys and some by levers. Wring-
ers, mangles, sewing machines, grinders and polishers all use rotary motion for operation.

With these points in mind the source of power must be determined. This will depend on local conditions. If there is available a water power of sufficient size, the water may be carried through a pipe to the house and there by means of a turbine or an over-shot wheel be converted directly into power, provided adequate drain pipes for the water can be provided. If natural conditions do not permit of such an arrangement, a turbine located at the power site may operate an electrical generator, the current from which may be transmitted through wires to a motor at the house, thus providing rotary motion.

If no water power is available it may be that there is a dairy on the place in which a steam boiler is fired up every day. In such a case a thermally insulated pipe laid in a trench might conduct steam to a small steam engine in the cellar which could thus be operated at practically no trouble or expense. The idea of using power from a windmill either directly or through a dynamo or storage batteries is not practical except possibly under some very unusual natural conditions, certainly not in New York State.

While special conditions may make possible some one of the plans just mentioned, the great majority of problems require for their solution the use of the gasoline engine. This may be of either the two cycle or four cycle type; probably the latter with hit-and-miss governor and either contact spark or jump spark is the most economical and reliable. But little power is required, one-quarter horse-power being sufficient for most purposes except for stationary vacuum cleaners and for pumping. One horse power or at most one and one-half horse power is amply sufficient for all practical purposes. Engines of larger sizes will simply waste gasoline. Before installing a gasoline engine in the house it is necessary to secure a permit from the insurance company and care should be used in following their instructions, as gasoline is dangerous.

If the engine be located in the cellar, the power transmission devices used will consist of belts, pulleys and shafting which can be easily arranged to suit local conditions. If, however, the engine be located in a building to avoid the noise, considerable ingenuity must be employed in selecting the transmission system. The most flexible and the neatest plan is to have the engine run a dynamo and thus provide current to run one or more motors in the house, the connection being made by overhead wires conveniently located.

Should this plan seem too expensive direct mechanical connection may be secured by means of a wire rope running overhead, or in a boxed tube under ground connecting pulleys at each end and so furnishing rotary motion. Or by belting the engine to the pump jack, reciprocating motion may be secured which can be conveniently and efficiently transmitted underground to the house by a small iron pipe sliding back and forth in a larger iron pipe of suitable size and suitably lubricated, which shall serve as a guide for the working member. This plan is in successful operation and should be applicable in many places.

Another plan of more limited applicability is to have the engine run a pump, water from which is forced through pipes to small water motors of from one-eighth to one-quarter horse-power, located at any desired point in the house from which the waste water can be conveniently drained. Unless ample water supply is available, this water must be returned to the pumps to be used over again. If the return is not possible and the supply limited, the plan is not feasible.

The problems involved do not demand a large engineering knowledge but require rather that native common sense and ingenuity which should be inborn in the American farmer. There are many cases in which power should be made available for the operation of machinery for household work and the whole problem is presented as one really worthy of careful consideration.
SECONDARY SCHOOL AGRICULTURE IN NEW YORK STATE

By Herbert E. Cook

Dean of the N. Y. State School of Agriculture, St. Lawrence University, Canton, N. Y.

THE State of New York began its secondary educational work without any definite plan. Because of this indefiniteness some of our leading men were opposed and so expressed themselves with considerable force. Politics were made the scape-goat and credited with launching upon the State an unrelated and maybe disastrous plan. We have not the time or disposition to discuss this phase of the question; suffice it to say that no disaster has come to us.

The air was charged with a feeling that something must be done if the country life of our State was to be developed, beyond the capacity of our State College. The writer who has had for twenty years more or less acquaintance with our leading thinkers and actors in this field is inclined to say that the present wholesome situation is due to a broadminded and generous sentiment which has prevailed among our leading men in the College, Experiment Stations, Department of Agricultural, and Educational Department, the agencies which have been moving together for common good.

I should say that whatever success had come was due to willing, ready and conscientious men rather than to the plan of action. I have been free to say from the start that any effort to formulate a related plan of work throughout the State would be a hindrance and possibly disastrous. In other words, I preferred to trust the men who were interested in the work rather than to trust men who would speculate on the future needs. From this point of view the writer has urged against the establishment of any more secondary schools similar to those now in operation. These schools are now doing probably twenty-five per cent and may be fifty per cent of their work that could as well be done in the local high school, at very much less expense to the State.

I do not wish to be understood as favoring the discrimination against country boys from the grades. These men constitute our most hopeful resource. If the high school was properly organized and related in its work to these secondary schools, young men would take more kindly to the high school and see in it a stepping stone to a more elaborate and finished course which these secondary schools could give. It is my opinion that we need to-day a relationship between the high school and the secondary agricultural school a great deal more than we need a relationship between the secondary school and the State College.

What we want to do, as I see it, is to train men for the farm and good citizenship. Such a course as I have mentioned will do it. This plan does not mean less men in the College. That will all take care of itself. This farmer man who is to plow and sow and reap, demands of the State as much education as he can use in the present development of our country life. If he has more than he can assimilate into his business and profit thereby it may become a positive damage to him.

It seems idle not to measure the Agricultural Educational needs of the time by the opportunity presented to use that education.

The difficulty now in relating our courses to the College is the fact that the most of our men need a finishing course. If we give them two years similar to two years in College they have not received here that condensed education which their business demands. The men have spent their time but have not received the training they need.

Our course at St. Lawrence opens in September and closes in June. From the standpoint of short course work there is a disadvantage because of its interference with farm work.
I am convinced that the full college period of time has a very decided advantage in a two years' course known as a finishing course. It obliges the men to set apart two years for their education. In that time they get some real mental training. The short course man gets some facts and some enthusiasm which are helpful.

As soon as field work is open in the spring an even number of men are selected, the selection being based upon scholarship and adaptability, half working each alternate day and taking class room work each alternate day. For this work they receive no compensation. It is simply substitution and is credited on their grade cards. After school closes in June these men are paid for their labor until opening in the fall. These men are first year men. The plan has been very satisfactory. Two years of school with one season of actual farm work is a very fair equipment.

Everyone recognizes the necessity for practical work as they do for mental training. Our purpose is to combine these in a manner that will give the farm touch coupled with mental poise and force.

The open country has use for men who have a broad human grasp of their business and the affairs of the State and nation.

The open country also has use for men trained in the technique of the farm.

A proper blending of these requirements will build a safe and desirable citizenship.

The registration at St. Lawrence State School of Agriculture, including domestic science and short course (three months) dairymen has increased in four years from 14 to 151.

It is early in the life of the Institution to determine the success or failure of graduates. Not less than ten years will be required to do this. Those who appear the most capable at the start, often give way later to the slow patient plodder who is never spectacular but always on his job.

The Institution has also under way an elaborate system of farm accounting for the purpose of ascertaining cost of production. Two bulletins have been published. We have labored upon land nearly abandoned, with buildings incomplete and with students as workers. This situation has made the expense somewhat higher.

The business of farming is very largely a family affair. No cash account is kept of the labor and so, generally speaking, little is known of actual cost of production. The writer feels confident that this work is warranted and may prove to be of value to other sections than our immediate locality.

The farm is now divided into two parts, one section is devoted to demonstration and experiment, the other managed as a commercial proposition.
THE RELATION OF INSECTS TO DISEASE

By William A. Riley
Assistant Professor of Entomology, Cornell University

To the popular mind insects are of economic importance in so far as they are an annoyance or direct danger to man, or are injurious to his crops. It is only within the past decade that there has sprung into prominence the fact that in another and much more insidious manner that they may be important agents in the dissemination and transmission of disease. The diseases so disseminated in this climate are among those especially prevalent in rural communities, and a knowledge of their sources should be universal.

If we consider the various ways in which insects may affect health, they fall into three general groups:

1. Through their bites or their stings they may be directly poisonous.
2. They may be parasitic and feed directly on the tissues of their human host.
3. Harmless and merely annoying in themselves, they may transmit and disseminate disease. In this, their most important relation, they may act in one of three ways:

(a) As simple carriers accidentally transporting germs which they deposit on the body of man, on his clothing, eating utensils, or food.
(b) As direct inoculators of germs which adhere to their body or to their mouth-parts, to be thus deposited on wounded surfaces or to be injected by the bite of the insect.
(c) Finally, as intermediate hosts they may be an essential factor in the life cycle of the disease-producing germ. Without the insect the germ could not develop and the disease which it caused would be absolutely stamped out.

The first two groups,—those of poisonous and parasitic species, need but brief mention. In this, as throughout the discussion, the term “insect” is used in its broad, popular sense, to include not only the true insects but the spiders, mites and other related forms. The venomous properties popularly attributed to these little animals is in most part wholly imaginary. The belief has not even the apology of that concerning common snakes, for insects are neither terrifying in appearance nor are many able to inflict serious wounds. Yet it should be recognized that there exist a few poisonous species and any discussion of these must take into consideration the fact that their relative virulence depends upon the susceptibility of the individual affected.

Of all the supposedly poisonous kinds, the spiders are most generally feared. So wide-spread is the belief in their venomous nature and so many are the circumstantial reports of injury due to their bites that one would not seem justified in dismissing all such accounts as fabulous. And yet, we may safely say that at least in so far as the Northern States are concerned, there is not on record a single authentic case of injury due directly to spider bites. The writer has personally experimented with many of our largest native spiders. In no case was the pain any greater than that caused by the prick of a pin.

Of the true insects there are several species whose bite is painful. The “kissing-bug” scare of a few years ago, though primarily hysteria, was based upon authentic cases of severe bites from these species, which only exceptionally attack man. Whenever the periodical cicada, or the so-called “seventeen-year locust” appears, stories of its poisonous bite are common. They are wholly without foundation.

A few caterpillars are clothed with nettling or stinging hairs, whose effect is strikingly dependent upon the susceptibility of the individual coming in contact with them. The most serious pest of this nature in the New England States is the larva of the imported brown-tail moth, which is greatly extending its range.

Of the second group, the truly parasitic forms affecting man are those
living on or within the skin. The most important of these from the medical viewpoint is the "itch-mite," which burrowing into the skin and increasing astoundingly in numbers causes the disease variously known as "seven year itch," "Norway itch," or "scabies." This disease, formerly a scourge of camp and other crowded places is by no means rare at the present time.

All of these methods by which insects may affect the health of man have long been recognized and, until recently, have been the only phase of the subject which have received serious attention. But the discoveries of the past few years have opened up an almost unsuspected field and now, all over the world the attention of medical men is focussed upon the third phase of the subject and we are just beginning to realize the enormous part which insects may play in the transmission of disease. No other discovery since the demonstration of the germ theory of disease has done more to advance the science of preventive medicine. It is important that every educated person have a knowledge of the discoveries which have revolutionized our methods of combating some of the most dangerous diseases of mankind.

The consideration of the subject may be from the three view points already suggested, viz., insects and their allies may be considered as simple mechanical carriers, accidentally scattering disease germs; secondly, as direct inoculators; thirdly, as intermediate hosts of certain disease-producing germs which undergo, within the insect, certain changes before they are able to develop anew in man.

INSECTS AS SIMPLE CARRIERS OF DISEASE GERMS

As typical of the way in which insects may mechanically carry and scatter disease germs we may consider the agency of the house fly in spreading typhoid fever and other intestinal diseases. When we consider that bacteria are omnipresent and that they are so minute that the point of a pin may carry enough to give a man the lockjaw, it doesn't need a doctor nor yet a scientist to tell us that an insect the size of a fly may carry literally millions of these suspicious organisms. By careful experiment it has been found that a single housefly may carry at one time as many as six million, six hundred thousand, living germs. It then becomes a question of whether they have access to the kinds that cause disease.

The housefly is one of the filthiest of insects. It has its birthplace and lays its eggs by preference in horse-manure, but that which makes it especially dangerous to man is that it will breed in and feed upon human excrement, as well as other filth. The life history, from egg to mature fly, is completed in about ten days, and there may be at least a dozen generations in a season. It has been estimated that under perfectly favorable conditions, the descendents of a single over-wintering-fly might by the end of a season number 190,000,000, 000, 000, 000!

Typhoid fever, infantile diarrhoea, and certain other intestinal diseases are specific germ diseases—they are not caused by dirty water, or by sour milk, or by any other thing which has not become contaminated by excrement containing the germs of the disease. These germs may come from sewage which flows into the well, from utensils rinsed with the polluted water, or they may be carried by flies which have fed on excrement. Consumption, too, is due to a specific germ, which may be disseminated by flies which have fed on sputum.

Unfortunately, in the appearance of the fly which comes so blithely to sup with you, or with which you fight for food in some public eating house, there is nothing to indicate whether it has just fed upon some festering sore, or the disease-laden discharges of a typhoid patient, or whether it has merely been feeding upon some attractive bit of putrescent or decaying animal or plant matter. The only safety is in warfare on the whole tribe.
INSECTS AS DIRECT INOCULATORS OF DISEASE GERMS

That insects may directly inoculate disease germs admits no doubt. Just as the physician may abrade the skin and introduce the germ of small-pox in vaccination, so a biting or piercing insect having fed on diseased tissue might transfer the germs to a healthy individual. There is clear evidence that flies may thus transfer gangrene from patient to patient in hospitals, and there is also evidence that anthrax may be borne from diseased to healthy animals by biting flies. The most striking case is that of the transmission of bubonic plague. This fearful scourge, which from time to time has ravaged almost every country of the old world and which not long since gained a foothold in California, is primarily a disease of rats and other rodents. Recent studies have shown beyond all question that its usual method of transfer to man is by means of fleas which have fed on diseased animals and which deposit the bacteria on the skin of man and they by their bite directly inoculate.

INSECTS AS INTERMEDIATE HOSTS OF DISEASE GERMS

Important as insects are in the transmission of these and probably other similar bacterial diseases they are only one of various sources of infection. Kill all the insects concerned and the disease would still exist, and be spread by other agencies. The third type, where the insect is an essential factor in the development of the parasite is the most important for, as stated above, extermination of the insect means absolute extermination of the disease.

Under this heading, the relation of the mosquito is not only typical but is of the most interest in this climate. It is now known absolutely that malaria is not the result of "bad air," misasms, swamp exhalations, or night air, but that it is caused by a little microscopic animal which feeds on the red blood corpuscles. The easiest and only sure way of diagnosing malaria is the finding of these minute parasites in the blood. They are transferred from man to man, and thus the disease is spread solely through the agency of some blood sucking insect. This insect is a mosquito of a particular variety,—the Anopheles mosquito. The malarial germ will not develop in any other insect and hence the control of malaria is a question of the control of the Anopheles mosquito. Here as in the case of any pest, control measures must be based on a knowledge of the life history.

The Anopheles mosquitoes pass the winter as adults and early in the spring deposit their eggs wherever there is standing water, in tin cans, watering troughs, barrels, tubs, and pools. From these eggs the "wrigglers" or larvae hatch. Unlike other mosquito larvae, those of Anopheles do not hang from the surface of the water by the tail but lie parallel with the surface. In about twelve days, in midsummer, they transform to the pupal stage and in three or four days the adults emerge. Thus the life cycle may be completed in a little over two weeks.

This mosquito is unable to transmit malaria unless it has fed on a man who is infested with the germ. Thus the Anopheles exists in regions where malaria is as yet unknown. If a malarious patient, or one who had apparently recovered but harbored the germs, were to move into the region and infect the mosquitoes they would become capable of spreading the disease.

A number of other diseases are now definitely known to be due to germs which are transmitted solely by insects which act as intermediate hosts. One of the greatest triumphs of preventive medicine is the control of yellow fever, based on the demonstration of the fact that it is a mosquito-borne disease. The mysterious "sleeping-sickness" of Africa which in one year claimed five hundred thousand victims, is borne by the little tsetse fly; elephantiasis in the tropics is mosquito-borne; certain relapsing fevers of the tropics and of our western states are
transmitted by ticks, as Texas fever, the most serious disease of cattle.

METHODS OF CONTROL

In view of these facts and of the rapidly accumulating evidence that still other diseases may owe their prevalence to insects it is clear that the control of insects affecting man is more than a matter of good house-keeping or of convenience—it is one of the utmost importance from the viewpoint of public health. As the house-fly and the mosquito are the chief offenders in the Northern States a few suggestions regarding their control are offered.

Although attempts to exterminate the adult insects are futile much good may be done by properly screening houses and in the case of the fly, by protecting foods. The most efficient preventive measures are those directed against the early stages.

The housefly breeds primarily in horse manure. As its life cycle requires ten days or more, manure should not be left standing about barns, but wherever feasible should be spread on the fields at least once a week.

Chemical treatment of manure piles is of little avail and cannot be recommended as a practical measure. On the other hand, in city barns a thoroughly practical and efficient method is to keep the manure in tightly closed receptacles until it can be carted away.

Abolish the open privy, or, if this is impossible, keep it screened from flies and make liberal use of earth or lime to cover the feces.

Thoroughly disinfect all discharges from a typhoid patient. This is of fundamental importance in the control of the disease for it enormously reduces the chance of water contamination as well as transfer by insects. Unfortunately, this is not alone sufficient, for the typhoid bacilli may be present in the discharges long after the patient is apparently well.

Keep all milk bottles covered and all food protected from flies.

The mosquito should also be fought through destruction of its breeding places. Leave no stagnant water, for where there is none, the mosquito cannot breed. Drainage of swamps not only accomplishes much against the mosquito but furnishes valuable land for agricultural purposes. Look out for inconspicuous breeding places,—the empty cans or bottles, old cisterns or rain barrels; in fact anything that may store water for the ten days necessary for mosquitoes to breed.

Where destruction of the breeding places is not desirable or feasible, much may be accomplished by treatment of the water with kerosene or by the introduction of small fish which feed voraciously on the larvae.

The old time advice not to expose one’s self to the night air in malaria-ridden regions is still applicable, though we now know that any virtue in this procedure is due to protection from the mosquito. In such a locality any and all measures along this line, such as effective screening, and sleeping under mosquito canopies, are well worth while.
THE COLLEGE OF HAWAII

By John W. Gilmore, B. S. A. 1898
President of the College of Hawaii

THE College of Hawaii is the youngest of the Colleges founded on the Land Grant Act of 1862 and in order it is the 68th institution to benefit by this act or those supplementary to it.

The College was established in 1908 with five students in preparatory courses. In 1909 the entrance requirements were increased to the usual 15 credits of approved high school work and preparatory courses abolished, and the courses of Agriculture, Engineering, Science, and Household Economics were instituted, each leading to its corresponding degree. At the present writing the College occupies three temporary buildings and is so overcrowded in several of its departments that all qualified students who apply cannot be accommodated. The faculty has grown from two in February, 1908, to seventeen now, and two or three more will be added during the coming year.

The Legislature of 1909 was asked to provide both lands and permanent buildings. To provide both was considered a heavy draft on the resources of the Territory for a single year so the request for the building was dropped and emphasis was placed on the need for land. Consequently sixty acres of suburban property were purchased and thirty acres were set aside by the Government. The total area commands a picturesque view of both sea and mountains, is of good soil and has a market value of $125,000.

The 1911 Legislature, just adjourned, appropriated $75,000 for a permanent building on this tract and $20,000 for maintenance expenses. It is hoped that the first graduating exercises may be held in this new building in June 1912.

In establishing the College of Hawaii, the two large problems that have been encountered are those of creating a sentiment on the part of the students and parents for the type of education that the College has to offer, and of convincing the people at large and the Legislature as their representatives that moneys appropriated for such an institution can be invested in no other way that will bring to the interests of the State a larger return in terms of good citizenship and efficient service. That these problems are being solved is shown by the increase in students and by the financial and moral support that the College has received.

The College of Hawaii helps to solve the problem of those students who, for various reasons, do not go to the larger institutions of the mainland for their college education. But, in addition to this, the opportunity is recognized of supplementing in a way the objects of education of similar institutions of the mainland. Most of the state colleges in arranging their curricula try to meet local needs. Not only do the curricula of colleges from east to west and from north to south reflect the general industrial and social conditions of the particular section, but often the subject matter of the courses offered is correlative in this respect. The College of Hawaii has an opportunity to develop courses and subject matter that shall relate particularly to tropic zone conditions. With this object in view, perhaps no other country or territory within the tropics offers the possibilities in this respect as does Hawaii. We have a cosmopolitan population, consisting of native Hawaiians, Japanese, Chinese Koreans, Portuguese, Spaniards, Americans, Europeans and other nationalities all living together peacefully and contentedly, and compared with many other regions, quite prosperously. This association of nationalities manifests large and interesting problems in sociology, economics and government that apply not only here but elsewhere in the tropics.
In agriculture especially, does Hawaii excel both in problems unsolved as well as the development of some industries. Sugar production is the main industry, and in no other part of the world is so great tonnage per acre secured, or are factory methods of extractions so highly perfected. Other agricultural resources, such as pineapples, rubber and dairying are of great importance.

Among tropical climates that of Hawaii is preeminently suited to study. The temperature is not hot, the thermometer rarely rising above 90 degrees, and at the same time the temperature seldom drops below 60 except in the higher elevations where freezing may be experienced. With the extensive and varied activities situated in so suitable an environment the College will appeal to students in all parts of the world who want training in activities pertaining to the tropics.

SUMMER MEETING OF THE WESTERN NEW YORK FRUIT GROWERS’ ASSOCIATION

By O. M. Smith, ’13

FRUIT growers from all parts of the State gathered in large numbers at Hilton, N. Y. on August 11th and 12th to attend the annual summer meeting of this Association, and the meeting was one of the most successful in the history of the Association.

The plan of the meeting consisted of an indoor session on the afternoon of the 11th, and inspection trips to orchards in the vicinity on the 12th.

At the executive session Mr. Lloyd Tenney welcomed the visitors and explained the plans for the orchard excursions. Pres. Clark Allis spoke and expressed appreciation of the preparations made for the entertainment of the visitors. Mr. J. D. Remington, Industrial Agent of the N. Y. Central Railway, explained that the railroad company was in many ways improving facilities for handling fruit. He predicted that within five years New York will ship more peaches than any other section of the United States and that 10,000 cars will be required to handle the peach crop. Prof. P. J. Parrott, of the Geneva Experiment Station next discussed the pear psylla. He explained that a thorough application of lime-sulfur spray to the trees, just after the eggs were laid, would prevent the hatching of the eggs and the consequent depredations of the insect. Commissioner P. A. Pearson spoke of the land and irrigation show to be held in New York next November. He said that the Southern and Western men proposed to show the advantages of their respective localities but that New York State would present an exhibition to show that opportunities are as good in this state as anywhere. Prof. H. H. Whetzel discussed the subject of cankers. He defined them and outlined methods for the cure of diseased trees. Prof. U. P. Hedrick of Geneva announced that the Legislature had selected a new farm of 100 acres to be added to the Geneva Experiment Station Farms.

The following day, Aug. 12, was spent in inspecting orchards about Hilton. Various orchards were numbered, and a guide book furnished describing each orchard as numbered. As acre after acre of well-cultivated, healthy orchards were passed one could not doubt the outcome of Mr. Remington’s prophesy that 10,000 cars would be required for New York’s peach crop.

Of especial interest to the visitor was the Hilton cold storage at Collamer Station, one mile west of Hilton. This plant, erected in 1909, is one of the most modern in the country. It is constructed of tile, coated with cement, is lined with three inch sheet cork, and has a capacity of 70,000 barrels. The cooling is done by means of compressed carbonic acid gas.
SILAGE AND CONCRETE SILOS
HOW FARMERS ARE BUILDING SOLID-WALL SILOS

The principal source of profit in dairying, stock-raising, and farming lies in improving the quality and at the same time keeping down the cost of production. In this matter of profit and loss nothing plays such an important part as the question of feeds and feeding. The natural feed for animals, the one on which they do best, is green pasture. In climates subject to frost, man has made the same provision for animals as for himself by providing them in winter with canned green fodder called “silage.” Silage is made most commonly from corn, cow peas, clover, sorghum, or alfalfa, merely chopped fine and stored in large water-tight cans known as “silos.” In dry weather or in winter, when green pasture cannot be had, this feed is equally good in producing a flow of milk or in putting fat on animals. One acre of a crop harvested as silage will feed twice as much stock as the same amount harvested in any other manner.

Like a glass fruit jar, a silo must be water-tight and jointless to keep the silage from moulding or “dry firing.” For this reason, and also because no painting or repairing is ever necessary, solid-wall concrete silos are coming into general use.

The best silos are built circular in shape. The size depends upon how many animals are to be fed daily, the quantity in pounds for each animal’s daily feed, and the number of days it may be necessary to feed them. The silo should be of such size that a layer of silage at least two inches in depth will be removed each day after feeding has begun. This prevents a thin top layer from moulding. A dairy cow requires about 40 pounds of silage per day, and the following table is based on this amount. Forty pounds is also the average weight of a cubic foot of silage.

### Dimensions of Silo According to Size of Herd.

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<th>Number of Cows in Herd</th>
<th>Feed for 150 Days</th>
<th>Feed for 240 Days</th>
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<td>Estimated Tons of Silo Consumed</td>
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It is frequently advisable to cut down the average daily ration or to use silage together with other feeds. With this thought in mind, and especially for dry weather feeding in summer, many farmers find it best to build two silos of moderate size instead of one large structure.

Locate the silo where it will be convenient for feeding. Usually it is
joined to the barn by means of a chute and passageway with doors. Since the silo and its contents are heavy, it must be built on solid ground. The bottom of the foundation should go below frost line. The silo may, with advantage, extend four to five feet into the ground. Dig the pit large enough to allow for the thickness of the circular walls and a footing two feet wide.

In order to save lumber the concrete is poured into forms which can be moved up as the concrete sets or becomes hard. These movable forms consist of two circular shells three to four feet high, so made that one fits within the other with space between for a six-inch wall. The horizontal framework consists of two-by-four-inch timbers cut to a circle, which are covered with sheet metal or wooden lagging. Each piece must be long enough to provide for a six-foot three-inch length of the circumference of the circle as well as several inches for the lap or strap joints. The forms are raised by loosening them at the joints and setting them up again on the finished section of the silo.

Concrete for silos should be rich in Portland cement and should be put into the forms mushy wet. Mix it one part cement to two parts sand to four parts crushed rock. Four parts of clean pit or bank-run gravel may be used instead of the sand and rock. Measure all materials on the basis that one bag of cement equals one cubic foot. Many persons raise the concrete in buckets, but the work can be done more quickly and easily by using a horse together with a derrick or a well braced jib-boom fixed to an adjoining building.

The finished silo shown above is 15 feet in diameter (inside) and 36 feet high, of which four feet is below ground. At odd times all of the materials were hauled, so that there would be no delay when the work was started. After the pit was dug to solid clay, the concrete footings (two feet wide and one foot thick) were placed and a four-inch concrete floor was laid upon the natural clay bottom. The next day the forms were set up, the reinforcement placed, and the walls begun. These forms
Salutations

To the greeting of our Dean, the Countryman adds its own cordial greeting to the returning students, to other members of our College, and to the class of 1915.

The question uppermost in the minds of most of us at this time probably is,—how can we get the most out of our college year. The answer is suggested by the name of a little book entitled "How to Live on Twenty-Four Hours a Day." Our schedule of studies only occupies about eight of these hours; a better schedule includes a plan for each hour of the twenty-four, though all of these would not wisely be credited to our waking hours. By this time most of us have made out our schedule of studies, and this should continue as our first duty. However, we have a second duty, which is toward the activities of our College, and the hours we are going to devote to them might well be incorporated in our twenty-four hour schedule at this time. The amount of time which may wisely be devoted to activities, varies of course, with the individual, but no education is complete unless ripened by association with one's fellow students, and this is best gained through some form of University or College activity, be it athletic, literary, or in connection with clubs or societies. Enter into some of these now, and continue the connection throughout your course or at least for the year. You owe this much to your College; you owe it to yourself. For the freshmen all of these activities will be explained in detail at their "Get Wise" meeting which no freshman should miss.

Dean Bailey

It is a matter of common report that Dean Bailey has proffered his resignation as Dean of the College. The simple statement of this fact will be received with profound regret by the legions of friends both of the Dean and of the College, and by none more so than by the student body. The name of Dean Bailey has been so long and so intimately associated with our College that it is impossible to think of one without thinking of the other. More than this, the work of Dean Bailey which has won for him world wide fame has reflected a glory on the College with which he has so long been associated in the public mind, and our College has thereby been greatly benefited by reason of his great reputation as well as because of his distinguished services. The public services that the Dean has rendered to the College are too well known to be repeated here at this time, but the personal devotion and allegiance of every student has been won to him, and it will
be their earnest hope that the Dean will be persuaded to recall his resignation and continue his work with us. Perhaps there will be such a demonstration of the admiration and affection in which the Dean is held by all with whom he is now associated in the College, and such an emphatic expression of our desire to have him remain with us that he will be unable to resist it and will consent to remain our Dean. If such an expression will have any influence on him, it will certainly be made, and in such a way as will leave no doubt of its depth and sincerity.

In order to better acquaint the students with the various clubs connected with the college, write-ups of the different clubs will appear from time to time. The first one on the Round-Up Club starts with this number.

The Departmental Clubs

THE ROUND-UP CLUB is the student organization of the Animal Husbandry Department, now in its sixth year of successful existence. The club held its first meeting March 25, 1907, and since that time it has met weekly throughout the college year. It is one of the most informal of all the departmental clubs, in fact, it is merely a gathering of students interested in this work, who agree to meet weekly and discuss live-stock topics. There are no dues, anyone may come to the meetings and the only existing rule is that no member shall refuse to do anything in his power for the good of the club. All student activities in this department are carried on thru this organization; the Live-Stock Show during Farmers' Week, being conducted entirely by the members. For anyone interested in Animal Husbandry, one night a week can not be better spent than at one of the Round-Up Club meetings.

A speaker at a recent agricultural meeting told of visiting a farmer friend, and of being shown the prize herd of Holsteins before even being introduced to the farmer's wife. Although it may be true that some farmers become so engrossed in their work that they forget that the first prize stock for which the farm stock exists is the human stock, yet we believe that discussions which concern directly the farmer and his family themselves, in and about the home will be of vital interest to every farmer. For this reason many such articles will appear in our fall numbers.

FORMER STUDENT NOTES

'01, B.S.A.—Mr. Delos L. Van Dine, writes from Estacion Experimental de Azucar, Rio Piedras, Porto Rico. He is entomologist to the Experiment Station of the Sugar Producers' Association of Porto Rico. For seven years after leaving Cornell University he was entomologist of the Hawaiian Experiment Station. For the past two years he has been a special field agent of the Bureau of Entomology.

'72, M.S.—Dr. David Starr Jordan has tendered to President Taft his resignation as International Commissioner of Fisheries. This position was created three years ago under the treaty of April 11, 1908, with Great Britain. Under the terms of the appointment, the work of the commissioner ceases on the completion of the series of fishery regulations of the boundary waters, and the technical
investigations necessary for their completion. This work being finished, the administration of the treaty passes to the Bureau of Fisheries.

'77, B. S.—The George Washington University has conferred the honorary degree of Doctor of Medicine on Dr. L. O. Howard, chief of the Bureau of Entomology and permanent secretary of the American Association for the Advancement of Science, for “distinguished services to science in relation to preventive medicine.” Mr. Howard has recently been elected a member of the American Philosophical Society founded in 1743 for promoting useful knowledge.

'87, B. S.—Dr. Veranus A. Moore, director of the New York State Veterinary College, received the honorary degree of Doctor of Veterinary Medicine at the recent commencement of the University of Pennsylvania.

'88, A. B.—The New York State Conservation Commission has appointed Albert E. Hoyt, editor of the Albany Argus, secretary of the Commission at a salary of $3,500 a year and expenses.

'04, B. S. A.—C. W. Howard, Government Entomologist of Portuguese East Africa, is now home on leave of absence and plans to spend the year in special entomological work.

'05, W. A.—William Faulkner is now managing the home farm at Hornell, N. Y. He is carrying on general farming with potatoes and milk as the principal money crops. He is also developing a promising young herd of pure-bred Holsteins.

'07, B. S. A.—W. H. Alderman, who has been connected with the Geneva Experimental Station, has received the appointment of Professor of Horticulture at the West Virginia Agricultural College.

'07, Sp. Ag., '08, A. B.—A daughter, Dorothy Alice, was born on May 16, at Butler, N. J., to Mr. and Mrs. Henry Jennings (Golden Alice Ackerman).

'07, B. A.—J. B. R. Verplanck was married on Wednesday, June 28th, at Fishkill, N. Y., to Susan Van Wyck Andrews, daughter of Mrs. James Andrews. Mr. Verplanck is part owner and manager of the Stony Hill Farms at Fishkill, N. Y.

'08, W. A.—Ross C. Mead was married on June 14th, at Mapleton, N. Y., to Evelyn Sturtevant, daughter of Mr. and Mrs. S. T. Sturtevant. Mr. and Mrs. Mead are now at home at Newark Valley, N. Y.

'08, B. S. A.—M. C. Burritt was married on Wednesday, August 9th, at Bergen, N. Y., to Estella May Buell, daughter of Mr. and Mrs. Gilbert Newton Buell. Mr. and Mrs. Burritt will be at home after the first of October at 107 Williams St., Ithaca, N. Y. Mr. Burritt is connected with the office of Farm Management of the U. S. Department of Agriculture, and has assisted in the Winter-Course in Horticulture in the last two winters.

'08, Sp.—Arthur M. Kruse was married on Saturday, July 1st, at Flint, Mich., to Mabel H. Babcock, daughter of Mr. and Mrs. Wm. P. Babcock. Mr. and Mrs. Kruse will be at home after Aug. 1st at 670 Second Ave., Detroit, Mich.

'10, B. S. A.—On Tuesday, Aug. 8th, R. D. Anthony was married to Miss Marion Salisbury at Rochester, N. Y. Mr. and Mrs. Anthony were both graduated from the University of Rochester in 1908.

B. S. A.—E. M. Morrison, '11, and B. D. Gilbert, '10, have been engaged in Soil Survey work in Jefferson County, N. Y. during the past summer. Mr. Morrison is working under the direction of the New York State College of Agriculture, and Mr. Gilbert is in the employ of the U. S. Department of Agriculture.
CAMPUS NOTES

COMING EVENTS

Oct. 2nd, "Get Wise" meeting for freshmen. At this meeting the affairs and activities of both the University and College will be explained in detail to the freshmen.

Oct. 5th, First Assembly for 1911-12. Programme followed by an informal social hour. All members of the College of Agriculture are welcome.

During the summer an historic landmark has disappeared from our part of the campus. The old barn shown in the frontispiece which was erected in 1881, under the direction of Professor Roberts, and which was in its day a great barn has been torn down. It was here that experiments were conducted by Professor Roberts regarding the production and management of stable manure, that have become standard and are now quoted all over the world. The college, however, will soon have a new and more up-to-date home for this department, for the legislature has appropriated money for new barns and plans are now under way for their construction.

The Summer School in Agriculture was a pronounced success. There were 128 registered students. The enrollment was twice as great as was expected, and the fact that such a school was desired by the citizens of this state was very strongly emphasized. On Aug. 8th, there was organized a Cornell Summer School Association with the following officers: President, Harper Sibley, (grandson of Hiram Sibley), Rochester; vice-president, John D. Bigelow, Ithaca, N. Y.; secretary, Howard M. Bowen, Sinclairville, N. Y.

Mrs. Rose Morgan, wife of Dean O. S. Morgan of Alfred University, lectured on "Music in Relation to County Life" on July 12. Dr. W. H. Jordan, of the Geneva Experimental Station, spoke on the nineteenth of the same month on, "What we Mean by Agriculture in the Rural Schools." On the twenty-sixth Director Bailey spoke on, "The Survey idea in Country-life Work."

Several bulletins have been issued by the college during the summer, as follows: Bulletin 297, Studies of Variation in Plants, by Harry H. Love, Assistant Professor of Plant Breeding; Bulletin 298, The Packing of Apples in Boxes, by C. S. Wilson, Professor of Pomology; Bulletin 299, The Elimination of Tubercle Bacilli from Infected Cattle, and the Control of Bovine Tuberculosis and Infected Milk, by Prof. V. A. Moore; Bulletin 300, The Cabbage Aphids, by Glenn W. Herrick, Assistant Professor of Economic Entomology and J. W. Hungate; Bulletin 301, Sweet Pea Studies I, by John Craig, Professor of Horticulture, and A. C. Beal, Assistant Professor of Floriculture; and Bulletin 302, Notes from the Agricultural Survey of Tompkins County, by G. F. Warren, Professor of Farm Management and K. C. Livermore, Assistant Professor of Farm Crops.

Ground was first broken for the new Poultry building on August 6 and for
The Home Economics building on August 8. Work is progressing rapidly on both structures.

* * *

The photographs on this page shows the park back of the College of Agriculture and the new amphitheatre which has been built into it for outdoor classes.

PARK WOODS NORTH OF COLLEGE OF AGRICULTURE.

On July 28, the examination for the position of District Superintendent of Rural Schools was held at the College. Many of the Summer School students took this examination.

* * *

Assistant Professors White, Needham, Fleming, Love, Gilbert and Reddick have been advanced to full professors and Messrs. Knudson, Livermore, Beal and Barrus to assistant professors. Mr. E. Gorton Davis has been appointed assistant professor of Rural Art. Mr. J. C. Bradley who took his Ph.D. degree at Cornell has been appointed assistant professor of Systematic Entomology to succeed Dr. MacGillivray.

* * *

The training conference for rural leaders, held July 21 to 28 inclusive, at the College was a pronounced success. There were in attendance country ministers, Y. M. C. A. Secretaries, school teachers and principals, farmers and farmers' institute conductors. The program was of exceedingly high character throughout. Many of the Summer School students were present at the evening session. Plans are being made for a similar conference next summer.

* * *

A temporary Farm Mechanics Laboratory has been built near the Animal Husbandry Building. The room formerly used for a Farm Mechanics Laboratory is occupied by the Plant Physiology Laboratory. The Soils Laboratory has also been rearranged so as to accommodate 250 students working in sections.

* * *

The Department of Pomology expects to make large plantings of plum and cherry trees this fall. Their dwarf apple orchard has been spoiled by the work in the lower part of Alumni Field. E. L. Markell and H. B. Knapp are to be assistants in the department this year.

* * *

Professor Leon Bachelor, Professor of Horticulture in the University of Utah, formerly Instructor here, visited the college in August. He took examinations here for the degree of Doctor of Philosophy based on his study of peonies.

* * *

Professor C. S. Wilson was in Virginia on a farm train in the early part of August.

AMPHITHEATRE IN PARK WOODS.

Professor P. J. White has withdrawn to accept a position at the State Agri-
Professor A. D. MacGillivray has withdrawn from the College to take a position in the Department of Entomology at the University of Illinois at Urbana.

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Mr. E. S. Guthrie spoke at the Grange picnic at MacLean, N. Y.

Prof. H. E. Ross delivered an address at the Dairymen's picnic at Otsego, N. Y., on keeping cow records.

During the past summer, Prof. W. A. Stocking has been investigating the bacteriology of cold storage eggs under the direction of the U. S. Department of Agriculture. Prof. Stocking's headquarters were in Omaha, Neb., where he was given an excellent opportunity of observing the extensive methods of handling cream in large quantities as practiced in the West.

Ray E. Deuel has been appointed Instructor in Animal Husbandry.

GENERAL AGRICULTURAL NEWS

A VICTORY FOR WILD LIFE

Senator Howard R. Bayne, Assemblyman George A. Blauvelt and their allies have won a notable victory for the game birds and quadrupeds of the State of New York, and other states as well. The Bayne-Blauvelt bill to prevent absolutely the sale in New York State of all wild American game has been passed by the State Senate 38 to 1, it was passed unanimously by the Assembly, it has been signed by Governor Dix, and is now a law.

Stated briefly, the new law absolutely prohibits in New York State, at all seasons, the sale, or importation for sale, of any species of American wild game, save hares and rabbits. Those rodents have been declared a pest to fruit-growers. No longer is it possible for ruffed grouse, pinnated grouse, any American quail, woodcock, snipe, or any American shore-bird, wild goose, brant, or wild ducks of any species, to be sold in the State of New York, no matter where they may have been killed.

The Bayne law provides, however, that certain species of game that can be reared successfully in captivity, and killed by hand, may be sold and consumed, under certain restrictions. It is provided that anyone who wishes to breed and rear game for sale may procure a state license, for $50, under which he may breed, rear and sell under official tags, the following species: elk, white-tailed deer, mallard duck, black duck, and Old World pheasants of all species. All these must be killed and marketed as the law directs, in a manner which will not permit the substitution of any wild game for domestic game. Everything killed is officially tagged, and the metal tags must remain in place until the game is sold and served.

The fight was won solely by the tremendous wave of public sentiment that rolled up behind the bill, and finally swept it through the legislature, with only one vote recorded against it. It is estimated that not fewer than 30,000 letters were written, from all over the State, to Senators and Assemblymen, asking them to support the Bayne bill. It is said that some legislators received between 250 and 300 communications of this nature. The managers of the campaign fur-
nished facts and information, and then asked that the friends of wild life would express their own views on the situation.

Dr. Hornaday declares that "New York is the Gettysburg of the war between the Army of Destruction and the Army of Defense. From this time henceforth, the tide of slaughter of wild life will steadily be rolled back. We will gain more Atlantic States for the Bayne-Blauvelt law, and keep everything that we gain. It is now time for Pennsylvania, Massachusetts and other states to enact our law to stop the sale of wild game, and give the game a chance to return to our desolated fields and woods."

* * *

THE SIXTH ANNUAL NATIONAL DAIRY SHOW

The Sixth National Dairy Show held in the International Live Stock Amphitheatre, Chicago, Illinois, Oct. 26 to Nov. 4, inclusive, will not only be the largest but the most attractive and comprehensive in the history of the Exposition. The plans of the Association are to make it intensely educational in every department of the dairy industry it represents, and to establish the annual Exposition as the clearing house of the dairy industry in the United States, Mexico and Canada.

* * *

CANADIAN RECIPROCITY

As it stands alone this reciprocity agreement is unjust to farmers. It takes from them the only "protection" that ever did or ever would do them any good, while it retains the tariff on manufactured goods. Standing alone it would compel our farmers along the border to sell in a free trade market and buy needed goods at high tariff prices. But it will not stand alone! Our desire is to give readers the facts without personal feeling or prejudice. We have interviewed many Congressmen so as to learn their personal reasons for supporting this bill. Many of them agree that the border farmers are justified in feeling that they are unfairly treated. They say, however, that a vast majority of the American people demand a fair, downward revision of the tariff. Of all the methods for starting such revision there was nothing practical except this Canadian reciprocity. Any other method would simply have started us on another round of low and high tariff such as we have always had before. That was the argument which carried this bill through Congress, and it will be followed by a general revision which will, we believe, help us all.

We give you what we have found to be the truth about the passage of this bill. The R. N.-Y. is not known as a quitter, and we think we have proved our willingness to stand for farmers' rights, but we will all do well to face the fact that the days of high tariff are numbered. We shall learn how little this tariff has really helped us after all. Our advice is to accept the situation, give the new law a fair trial, and devote our energies to the middleman question. We must make a fight for a larger share of the consumer's dollar, and we can get it; while a return to a high tariff is now out of the question.—R. N.-Y.

* * *

ANNUAL MEETING

The next annual meeting of the American Association of Farmers' Institute Workers will be held at Columbus, Ohio, November 13 to 15, 1911. At the same place and beginning November 15, will be held the annual meeting of the Association of American Agricultural Colleges and Experiment Stations.

* * *

SHRINKAGE OF CORN IN STORAGE

In order to determine the amount of shrinkage or loss of weight occurring in shelled corn containing various percentages of moisture while in storage in elevators or during transit in cars, the Department of Agriculture, in cooperation with the Baltimore and Ohio Railroad Co. and the Baltimore Chamber of Commerce, has conducted an experiment with 500 bushels of shelled corn, the test beginning January 5, 1910, and lasting 147 days.
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The corn used was taken from regular car receipts and was left in the wooden hopper of a 30,000 pound scale at elevator B of the Baltimore and Ohio system at Locust Point, Baltimore. At the time of storage the moisture content was 18.8 per cent. and at the close of the test 14.7 per cent., or a loss of 4.1 per cent. The weight per bushel had decreased from 54.7 pounds to 50 pounds, and the total loss of weight was 1,970 pounds, or slightly more than 7 per cent.

The shrinkage was found not to be constant, as at certain periods there was a retardation in the rate of shrinkage or even a temporary increase in weight due to the absorption of moisture from the atmosphere. The average temperature of the corn and the temperature of the air was 20° F. The shrinkage during the first 105 days, while the corn remained in good condition, was approximately four-tenths of one per cent.; while from April 21 to May 14, during which time the corn went out of condition, becoming sour and hot, with a maximum temperature on May 2 of 138° F, the shrinkage was 2.6 per cent. The shrinkage from May 14, after the corn had been cooled to 35° F, by three elevations to June 1, the end of the experiment, was 2.6 per cent. (Cir. No. 81, Bureau of Plant Industry, U. S. Department of Agriculture.)

* * *

Weevil that is Destroying Alfalfa in the West Traced to Asia

Government and State agricultural agents, who have been busily engaged for months in endeavors to trace the source of the alfalfa weevil, which has been creating havoc with this valuable crop in Utah, believe they have succeeded in the quest. They say that the bug has been brought to the United States from far off Russian Turkestan.

A local dealer in seeds some time ago heard that on the plains of Turkestan a fine grade of alfalfa was grown. He determined to test it in Utah and see if he could make an improvement on the native growth. So he sent for a large quantity of the seed and in order to introduce it put the price three or four cents below that charged for the local seed. He made some large sales. It is now said by the agents that they have proof that the weevil appeared this spring at most of the farms on which this seed was sown and from them quickly set out on its work of destruction.

If this is true the seed dealer’s experiment appears in the light of a calamity. There had been other enemies of alfalfa, but none that did any great damage, and the crop has been a most important one in connection with the cattle and horse business. With the advent of the weevil this summer, whole fields have been practically made barren, the weevils not contenting themselves with eating the growing plants, but even affecting the roots so that the succeeding crops have been very poor, though the bugs have taken themselves off and invaded adjoining farms.

The situation is so serious that the exportation of Utah alfalfa has been practically forbidden by all the surrounding States. California has established a strict quarantine against it. Measures are now being taken to prevent the shipment of the product from affected districts to other parts of the State. A local commission merchant on opening a car shipped from a southern county found the whole mass sprinkled with the weevils. The Government and State authorities are doing everything in their power to stop the pest, even going over whole fields with oil burners in order to kill the bugs and eggs, too, but so far they have been unable to stop the march of the insects.

were 4 feet high and were made in eight sections six feet three inches long.

Since silage contains so much water, steel rods are necessary as reinforce-
ment to withstand the pressure. To get the best results, this reinforcing
should be placed exactly one and one-

half inches from the outside of the silo
wall. Rods three-eighths of an inch in
diameter and ten feet long were used.
The vertical rods were spaced 18 inches
apart. Measuring down from the top of
the silo, the horizontal rods were
spaced as shown in the tables below.

### Spacing of Horizontal Reinforcement.

<table>
<thead>
<tr>
<th>Feet distant from top</th>
<th>40-35</th>
<th>35-30</th>
<th>30-25</th>
<th>25-20</th>
<th>20-15</th>
<th>15-10</th>
<th>10-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spacing in inches</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

The horizontal rods were carefully
made into solid hoops by bending the
ends so as to hook together. They
were also wired to the inside of the
vertical rods. (Complete plans for
silos may be obtained free from any
Portland cement company.) Two ex-
tra lengths were placed in the concrete
one and one-half inches above the door
openings for removing the silage. These
openings were made by a removable
form (also cut to the circle), which
fitted snugly between the molds for
the silo wall.

The silo forms were filled with con-
crete and allowed to stand over night.
The next morning they were loosened,
raised and again filled. These opera-
tions were repeated daily until the side
walls were finished.

With a 4-inch concrete roof, the silo
is entirely fire- and repair-proof. The
roof was built on a temporary wooden
roof, which was entirely removed after
three weeks. The concrete roof is
cone-shaped with a rise in the center of
2 feet and a drip or overhang of 1 foot.
One inch from the under side, this roof
is reinforced with three-eighths inch
rods laid like the spokes of a wheel and
spaced 18 inches at the rim. Every
other rod reached only halfway to the
peak of the roof. To hold the spokes
in position so that the concrete could
be forced between them and the tem-
porary wooden roof, one ring of three-
eighths inch rods was wired to this
reinforcing just over the side walls and
another half way to the peak. These
rods strengthen the roof greatly and
must not be left out. Water-soaked
weather boards were used to form the
circular edge of the roof. An opening
for the blower tube from the cutter was
formed in the silo roof in the same
manner as the doors in the side walls.

The list of materials required for this
silo is given below together with a very
liberal estimate of the cost of the same.
The silo was built by five farm laborers
in thirteen days. As a raise was made
each day, the four extra days were
spent in framing the forms, digging the
pit and building the roof. The owner
used gravel from his own farm pit in-
stead of stone and sand.

### Bill of Materials*

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushed rock, or screened gravel</td>
<td>40 cu. yds.</td>
<td>$1.10</td>
<td>$44.00</td>
</tr>
<tr>
<td>Sand</td>
<td>20 cu. yds.</td>
<td>$1.00</td>
<td>$20.00</td>
</tr>
<tr>
<td>Portland cement</td>
<td>.44 barrels</td>
<td>$2.50</td>
<td>$135.00</td>
</tr>
<tr>
<td>Reinforcing, 425 pieces of 3/8-inch x 10-foot rods</td>
<td>1564 pounds</td>
<td>$0.0234</td>
<td>$39.10</td>
</tr>
</tbody>
</table>

*Consult local dealers as to prices

$238.10

The first cost of concrete silos may
or may not be greater than that of the
best of any other kind. The time is
now at hand when farmers, like rail-
roads and corporations, are considering
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<table>
<thead>
<tr>
<th>In Bags</th>
<th>Sheep</th>
<th>Hog</th>
<th>Cattle</th>
<th>Shredded</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 lbs.</td>
<td>$1.50</td>
<td>$1.50</td>
<td>$1.35</td>
<td>$1.20</td>
</tr>
<tr>
<td>500 lbs.</td>
<td>6.00</td>
<td>6.00</td>
<td>5.50</td>
<td>5.00</td>
</tr>
</tbody>
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F. O. B. Chicago, Ill.

<table>
<thead>
<tr>
<th>In Bags</th>
<th>Sheep</th>
<th>Hog</th>
<th>Cattle</th>
<th>Shredded</th>
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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>
</tr>
<tr>
<td>2,000 lbs.</td>
<td>18.00</td>
<td>18.00</td>
<td>15.00</td>
<td>14.00</td>
</tr>
</tbody>
</table>

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Announcement of Sibley College of Mechanical Engineering and the Mechanic Arts,
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,
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L. H. Bailey, Director.

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It goes into the subject of sprayers and spraying mixtures very thoroughly. We'll be glad to mail it to you upon request.

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November, 1911

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COCOANUT TREE WITH OVER ONE HUNDRED NUTS—MINDANAO.
AGRICULTURE IN THE PHILIPPINES

By William S. Washburn, M. D.
United States Civil Service Commissioner

The Philippine archipelago, comprises more than a thousand islands with a total area of 115,000 square miles. There are ten others whose areas range from 100 to 1000 square miles.

In the northern portion of the archipelago the rainfall is excessive during a portion of the year and deficient during another period of the year. In the absence of low temperatures the seasons are characterized as wet and dry. The rainfall in the southern portion of the archipelago, however, is quite evenly distributed throughout the year. Artificial water supply through irrigation systems would materially increase the agricultural output in some of the islands. Although warm and moist, the climate is not unhealthful, and persons who observe the laws of hygiene enjoy as good health in the Philippines as do people living in most parts of the United States.

A somewhat detailed description of the character and production of the principal staples of the Philippines may be of interest.

The natural resources of the Philippines, of which the chief is agriculture, are comparatively undeveloped. Probably one-third of the area of the Philippines is available for cultivation; yet not one-tenth has ever been utilized. The agricultural implements and methods employed by the Filipinos when our Government took possession of the islands were crude in the extreme.

Little or no modern machinery was ever introduced during the Spanish regime and little was done in modern times by the Spanish Government toward developing the abundant agricultural resources of the islands.

Wherever the Filipino tickles the soil with the small, steel-pointed, single handled wooden plow, the warm earth smilingly responds with great crops of tobacco, sugar, and rice; but it takes several days with the slow-going carabao to scratch an acre. After about the third scratching, seed is planted. Every subsequent process is equally antiquated and slow and wanting in economy of time and product.

As in other parts of the Orient, rice is the most important article of food. In the tropics it takes the place of wheat. The rich, well-watered lands of the Philippines are well adapted to its production. After the ground is scratched with the same stick of a plow, the paddy fields are flooded and harrowed under water to a soft, muddy consistency, the wallowing carabao, or water buffalo, being here in his native element.

In the soft mud the young rice shoots are transplanted by hand, the natives, in this case usually women, standing ankle deep and thrusting each individual rice stalk into the depths of the mushy soil. The paddy fields are kept flooded until the rice begins to head. When the crop is ripe, men, women, and children are in the field
from early morning until the evening shadows fall, cutting with small knives each stalk separately and gathering them into sheaves of palay, or unthrashed rice. After the grain is separated from the straw by hoof or flail, it is winnowed by the soft breezes of the tropics as it falls from the bamboo basket held aloft usually by women, who stand thus engaged for hours under a sun-sheltering bamboo canopy.

By one more process the milk-white rice is separated from the hull by the use of a wooden dumbbell pounder in the hands usually of a woman member of the family. Thus, after many days of toiling and waiting, does the Filipino obtain this staff of life, this palatable, healthful food, eaten three times a day by natives and almost as often throughout the Orient by European residents.

The cocoanut palm is an important source of revenue in the Philippines, furnishing, as it does, one-third of the world's supply of cocoanut oil. After the young trees are well started they require little care. Young shoots from the growth of seed nuts which are allowed to lie in shaded places for a few months may be transplanted, fifty or one hundred to the acre, and the ground utilized and kept clear of weeds and grass by the cultivation of corn or such leguminous plants as peas and beans. Trees begin to bear when about seven years of age, and come to full maturity two or three years later, with an average annual yield of sixty nuts to the tree during its life, which ranges from fifty to one hundred years.

While new and varied uses of cocoanut oil have stimulated production, the market value is steadily increasing. As no other vegetable oil or substitute has been brought forward to take its place, the copra industry bids fair to maintain a leading place in the agricultural productivity of the islands, where its export value is ten million dollars annually, or nearly one-fourth of the total exports of the islands.

The waterways furnish means of transportation whereby the unhusked nuts are brought to Manila or other
Philippine centers of trade on huge rafts or in large open boats called cascoes.

Cocoanut oil, pressed from the meat or fruit, is commonly used in the Philippines as an illuminant and as a substitute for butter and lard. Copra, the dried meat of the nut, is exported principally to the oil factories in France, where it is used in making edible oils and soaps. The fiber or husk of the cocoanut is used for coir, for caulking boats, and other purposes. The making of alcohol and alcoholic beverages, such as tuba, or palm wine, the sap of the cocoanut palms, is an industry quite commonly pursued for local consumption, and there are provinces where it ranks as the most important industry. Early in the morning the tao, a name given to the laboring class, may be seen climbing the tall trees monkey-fashion, emptying the bamboo vessels, suspended over night under the cut flower-stems, into a larger vessel hanging on his back. The product is taken to a distillery, where it is converted into alcohol. In the early morning the tuba is a refreshing drink, much like fresh apple cider, but as the day advances it ferments rapidly. No less agreeable and refreshing to the weary traveler is the cool water or “milk” of the cocoanut.

The method of sugar cane culture in the Philippines is antiquated, as is also the production of sugar from the cane. The mills provided on the best sugar estates lose about one-half of the possible values of the sugar cane, whereas with modern machinery, such as is used in the Hawaiian islands, for example, 96% or 97% of the saccharine substance of the cane is secured. In some parts of the islands the syrup from the boiling pans is poured into large porous earthen pots, holding about 150 pounds each, and allowed to drain. After the molasses is drained off, the soft raw sugar is cut into cakes and laid out on flagstones for sun-drying before it can be shipped. There are no sugar refineries worthy of the name in the Philippines. A few of the most prosperous owners of sugar estates are introducing modern meth-

![Threshing rice by making carabaos trample over it, Bulacan Province.](image)
ods in this industry. The investment of foreign capital would revolutionize the sugar industry of the islands.

The most notable product of the Philippine islands, one which is nowhere equalled and is in demand in all parts of the civilized world, is Manila hemp, from which the best rope is made. The exportation during the fiscal year ended June 30, 1910, amounted to 170,788,629 kilos, of the value of $17,404,022.

Manila hemp (abaca) is the fiber of a wild plantain so similar in appearance to a banana plant that they are not ordinarily distinguishable. The fiber is contained in the leaf-stem of the plant.

To extract the fiber the Filipino has been accustomed for generations to use a simple device by which the leaf-stem is drawn between a block of wood and a knife hinged to the block and provided with a lever and treadle so that it can be firmly held down on the stem. The pulp is thus scraped from the stem, after which the fiber is spread in the sun, where it is dried in a few hours and is ready for baling. As only about twenty-five pounds of fiber can be thus produced by a man in a day and thirty per cent. of the fiber is wasted, this ancient method of extraction is being superseded by hemp-stripping machines invented by Americans.

In the southern part of Luzon and in several of the central islands where abaca is the chief product, cloths are woven of this fiber not only for home use but also for the markets of Manila, Iloilo, and Cebu. This is the sinamay worn quite commonly as waists for the women and shirts for the men in all portions of the Philippines. It may not be commonly known that among the most expensive and durable hats worn by women in this country are those manufactured from Manila hemp. It is, of course, well known that it furnishes the best material for the manufacture of rope which the world produces.

It may be of interest to note that on the island of Panay, and especially in and about Iloilo, the choicer, though less serviceable fabrics are principally produced, especially the jusi, a blend of vegetable fiber and Chinese silk.
The *jusi* cloth has in large part replaced in favor the once more famous *pina*, or pineapple-fiber cloth.

Individual American enterprise and energy are illustrated in the occupation of territory about the gulf of Davao in the island of Mindanao, where more than a hundred Americans have hewed their way to success through the dense forests of that region. Already they have planted more than two million hills of hemp besides numberless cocoanut trees. The investment there of capital and labor has been large, and returns are now coming in, not less than one-quarter of a million dollars from the sale of hemp alone being realized last year.

Of other important products, to the production of which on a large scale the climate and soil of the Philippines are well adapted, coffee, cacao, and rubber deserve special mention. There has been too little attention given to the production of these staples, although it has been amply demonstrated that conditions are most favorable to their culture.

From time immemorial the small cultivators of land in the Philippines have been dependent on the large proprietors for advances of money or food and seed, if not both, during the cropless season. One of the chief reasons for the dependence of the masses upon the *caciques*, or social and political masters, is the evil of gambling the principal vice of the Filipinos, the favorite form of which consists in cockfighting, which they follow with a passion that astonishes foreigners. With changing conditions under American administration, it is expected that this evil will gradually wane and disappear. Under the more favorable conditions of American occupation, agricultural productivity should be greatly increased and a degree of prosperity perhaps unequalled elsewhere should prevail in these tropical islands, which nature has so richly endowed.
ADDRESS BY EX-PRESIDENT ROOSEVELT
(Delivered before the students of the New York State College of Agriculture, November 3rd, 1911)

STUDENTS: This institution, the college of agriculture of Cornell University, is one of the institutions of the country which is at the present time doing the most vital educational work in our country. I did not know of the chance I would have to speak to you this morning, because I am not making speeches, and in that connection I recall the saying of the old New Bedford captain who said to his mate, "what I want from you, sir, is silence, and dom little of that." However, I could not refuse Dean Bailey's request, because I so often make demands upon his time and his best efforts. His service, so ungrudgingly rendered, has been of inestimable value, consequently, I did not consider myself at liberty to refuse.

I came, because, thanks to Dean Bailey, this particular college of agriculture with its aggregate enrollment, including the winter course students, of 1500 students and with its professorial and teaching faculty of about one hundred men, because, without injustice to any other institution this college is the foremost institution of its kind, the most useful institution of its kind, not only in the United States, but in the whole civilized world.

Turning so that he faced Dean Bailey, he said:

Dean Bailey, it is none of my affairs, but I should regard it as a calamity, not only to the state, but to the nation, if you do not continue to do your work at the head of this college.

Some people say that I did, when I was president, many unconstitutional things—Dean Bailey was one of these unconstitutional things. Congress said it was a usurpation of power on my part to appoint him and his colleagues on that committee, and that sensitive body refused to publish the committee's report. The Spokane Chamber of Commerce, however, not being quite so sensitive, published the report; and that report called attention to certain vital needs which were thoroughly appreciated by a few farsighted people of the nation. Of course, whenever the needs of a great nation are placed before the public, there is always a certain number of people,—good people but perhaps not very advanced people, who think it is unpatriotic to make a diagnosis of such things. Some of these would insist that there is nothing to remedy or if there is, that we are incompetent to remedy it.

Our hope of making the country life as important and helpful a part of the general national life as it should be, rests with the men and women of the future, who have done the kind of work you are doing, and have been given the kind of training that you are getting here now.

I wish to say a word of especial interest to the young men and more especially to the young women. The very best product of the farm is its product of men and women. If you do not have the right kind of men and women, all effort to improve agricultural conditions will amount to nothing. As the women comprise at least 50 per cent of the population, they have to do 50 per cent of the work of improvement. This improvement is to come from within, as well as without, the farmhouse. Dean Bailey has done no greater service to the cause he has championed, than by his insistance that while actual agricultural work is of the utmost importance, yet based on that as a foundation, there should be collective (or community) work.

As long as you are trying to develop merely agricultural practices on the farm for your only work, you are building, not houses, but merely the foundation for houses. While that foundation is indispensable, it is utterly useless if you do not also build the superstructure of the higher community life. Work for a high social
intellectual, and spiritual life in the country. The school-house, the Church, and all social associations of every kind must do their part in bringing up the standard of country life; and, ladies and gentlemen, in any work you are doing as in every form of political work, remember that it is useless to try to reproduce vanished conditions. Those conditions may have been excellent but they belong to the past. You cannot re-introduce them. If you merely copy them, you introduce the body with the soul out of it. The conditions of rural America under which everything can be done by a few individuals have vanished, never to return.

In the same way, we cannot get back to farm life of the middle, or early part of the 19th century. You will fail completely if you attempt to do that. What you will have to do, is to face the new conditions that necessarily mean increased urban development, and try to shape them so that it should not take place at the expense of the country, but should go on hand in hand with the development of the country. The extraordinary growth in the mastery of men over the forces of nature, and in perfecting mechanical appliances for the past century has rendered it inevitable that a much smaller percentage of people are now making their living on the soil than was the case a century ago. We cannot by anything we may do, restore the percentages of those living under rural and those living under urban conditions to those of a century ago. What we can do is to try to make the development of the country go hand in hand with the development of the city and while developing as strong a power of initiative as possible to see that there also goes with that individual initiative, the same power of well directed community effort, which has been so great a factor in the development of the cities. Nothing will take the place of this individual character. For the average man and the average woman on the farms, if they have not got the right stuff in them, no education will get it out because it is not there to get out. Individual character by itself cannot solve the existing problems, cannot meet the existing conditions. There must be direct community effort.

While education offers a man a foundation for his life, a foundation for his material success, yet it is only the foundation upon which the higher superstructure should be built. We cannot have any proper social life, any proper intellectual life in the country until we have a foundation of material efficiency, of material success and well being, or we never will have the right type of man and woman living in the country. If the improvement in country conditions means nothing but growing bigger crops and when these have been grown, moving off to the city, it is a failure.

This college here at Cornell has done much in leadership for other institutions, because it has recognized the many-sided nature of our national agricultural problem; because, while it insists that the first work to be done is to increase the actual products of the farm, yet it emphasizes that this is only the first work, and that it is equally essential while getting the country on a proper material basis, to see to it that every institution in the country that stimulates to higher ideals—intellectual, moral and spiritual, be developed to meet the increased social demands upon it, just as is the case in the city. It is of fundamental importance to take care of the crops, and after you have taken care of them, remember, that unless you can do a great deal more than teach how to take care of the crops, you will have come far short of your duty because you have failed to recognize that the all important problem in the country is the human problem; the problem of getting the right kind of men and women; the problem of developing men and women so as to make them, in the fullest sense, responsible American citizens.
THE BEGINNINGS OF FARM MANAGEMENT TEACHING

ONE of the latest subjects to be added to the courses in the agricultural colleges is that of farm management. So recent, in fact, that it is not yet represented in the majority of the colleges. In 1908, the writer secured statements from all the agricultural colleges as to any work that they were doing that included farm management. Only two agricultural colleges were then giving definite courses in the subject. Three others included some farm management work in other courses. To Professor Hunt must be given the credit for the beginning in this teaching. In four of the five institutions, the work was being taught by persons who had studied with him. In reply to requests for an exhibit of work for the graduate school, some amusing collections were received. Several states sent work on fertilizer tests; some on soil physics. But the work of the five institutions mentioned above was so suggestive that many persons went away with the idea of starting farm management teaching. In this graduate school, farm management was represented for the first time with lectures by Professor Spillman and the writer. The relation of farm management to other subjects was also discussed. These discussions were incorporated in the Cyclopedia of Agriculture.

At the last graduate school in 1910, the subject received a little more time, but the authorities of the school did not allow it full time as they did to agronomy, poultry, etc. However, the interest aroused by the discussions was so great that the subject will probably be fully recognized hereafter. At this meeting, the American Farm Management Association was organized. The second meeting of this association will be held at Columbus, Ohio, Nov. 15th.

At the graduate school at Ames, an exhibit of farm management work was made by most of the schools teaching the subject. There were about a dozen that were then doing more or less work. Now about twenty institutions are doing some work; about a half dozen are pushing the work vigorously.

WHAT IS FARM MANAGEMENT?

At the present time, there is no more important subject before the agricultural colleges than the organization of farm management work. The first step is the proper definition of the subject.

Being a new subject, the field of farm management is not always clearly understood. It has sometimes been confused with animal husbandry, horticulture, farm crops, or rural economy. It may be taught by persons who also teach these or other subjects, just as horticulture and dairy industry are sometimes taught by one man; but the distinction between the subjects should be none the less clear. The teacher of farm management finds that his work is much more closely related to animal husbandry, farm crops, and horticulture than it is to rural economy. One of the important subjects in farm management is the selection and purchase of a farm. This bears the same relation to rural economy as does the selection and purchase of a cow. It is the aim of farm management teaching to unite business principles with the scientific principles taught by the various departments into such a system that the farm as a whole shall yield the greatest profit. The rural economist must somehow tie all the farms together into a philosophy of progressive civilization.

The student of architecture is taught art by one man, drawing by another, sanitation by another, strength of materials by another; but he would
be a poor architect whose training stopped with these fundamentals. Finally, the student is required to make plans for buildings in order that he may have practice in applying the principles and in making estimates of cost. Similarly the student of farm management selects specific farms and makes plans for their arrangement, equipment, and management, with financial estimates. If a student has had practice in making such estimates for a dairy farm, he will have the method of attack in making plans for an orange plantation. One who has studied this subject ought to be fairly well prepared to go on to a farm and decide as to the type of farming to take up, field and building arrangement, cropping system, number of each kind of animals to stock the place, equipment required, capital necessary, the amount of labor required, the kinds of accounts and records to keep, etc.

"How shall I grow corn?" is purely an agronomy question, but "Shall I grow corn or some other crop?" and having grown it "Shall I feed it or sell it?" are purely farm management questions.

"What sort of a contract shall I make with my landlord?" is a farm management question, but the effect of tenancy on the welfare of the county is a subject for the rural economist. In our farm management investigations in New York, we have found the shortage of capital to be the most serious obstacle in the way of successful farming. The whole tendency of our banking system seems to be to drain the county of its deposits and direct them to the cities. At any rate, there are few bankers who know enough about the values of farm land to be able to make farm loans carefully. Not knowing, they lend on the acre basis rather than on farm values. Farmers find it very difficult to get money to hold crops. Not infrequently a farmer who has several thousand dollars of harvested crops finds it impossible to get a bank to loan him a few hundred on his note. Machinery is purchased on time at prices so much above cash prices that together with the interest rate, it frequently amounts to a real interest of ten per cent. Here we turn this question over to the rural economist with the request that he make a full study of the whole question of agricultural credit, for this properly belongs in his field.

WHY THIS SUBJECT IS NECESSARY.

When all the work of the agricultural college was taught by one man, there was little need for a separate course in farm management. Any ideas on this subject that such a teacher had were woven in with his teaching. Professor Roberts included much of the business principles of farm organization in his courses.

With the multiplication of departments in the Colleges of Agriculture, students are in danger of developing wrong ideas as to the relative importance of different factors in the management of the farm as a unit. The student who becomes an enthusiast on poultry may forget that successful crops must be raised if the farm is to prosper. The one who believes that alfalfa will make any farm pay may neglect to provide profitable animals to eat the crop. It is desirable, therefore, that the student correlate what he has learned in all the departments by applying it to the management of specific farms.

Scientific farming is not the buying of spray-pumps and milking machines, nor the spending of a lot of money that one does not have, although all of these things may be desirable at times. It is not farm mechanics or horticulture; it is not animal husbandry or farm crops. He who farms successfully must consider the farm as the unit.

Just now we hear much about what great crops are raised in Europe and how foolish our farmers are that they do not till every inch of earth and raise the maximum crop of the most intensive kind. First of all, a farm must pay. A state supported institution may raise maximum crops and do various other "stunts," but a farmer must make his farm pay. So long as the
days of Pliny this was ancient knowledge. He says: "I may possibly appear guilty of some degree of rashness in making mention of a maxim of the ancients which will very probably be looked upon as quite incredible, 'that nothing is so disadvantageous as to cultivate land in the highest style of perfection.'"

Lately we seem to have forgotten that the farmer must make the farm pay. In our survey work, we have found that the most profitable farms were raising good crops, usually quite a little above the average, but not fancy crops. Enthusiasm is a good thing but it is well to temper it with business sense unless your father made the money for you to spend.

Perhaps the most important service of farm management teaching is in aiding farmers to decide between various things, all of which pay. The farmer is usually so short of capital that his problem is not what would pay but what to do with his little money. He may know that his land needs drainage, that he ought to keep better stock, buy more fertilizer, use lime, sow alfalfa and may be sure that each of these will pay well. If he asked in a specialist he would likely be advised to improve in that particular line. His problem is to decide between the various possibilities and pick the best.

FARM MANAGEMENT TEACHING MUST BE UNPREJUDICED.

Since the teacher of farm management should be unprejudiced, it is very desirable that the subject be separate from any other department so soon as funds permit. If taught by a professor of agronomy or animal husbandry, such a teacher should understand that farm management is not crop farm management or animal farm management but a general subject. The tendency of all departments is to make a good showing for their special work. Some colleges are developing the subject in several departments, as dairy farm management, crop farm management, etc. It is not likely that this will result in good farm management teaching.

The most profitable dairy farms are those that also raise cash crops or other products. The teacher of dairy farm management is quite certain to overemphasize the importance of the dairy cow even if he does not go so far as to dream on how to keep the greatest number of cows per acre of land—as if man's mission were to populate the earth with cows. Profits are not measured by cows per acre. So a teacher of any specialty, if he be a live man, is almost certain to overemphasize his specialty.

For four years we have been hoping to have farm management in a separate department at Cornell. This year the hope has been realized. Cornell was the first institution to have a professor of farm management, but Missouri was the first to separate this department from all other work. Cornell is the second institution to establish the subject in an independent department.
THE "OLD MAN" IN TOWN AND COUNTRY

By L. A. W. Alleman, M. A., M. D.

Geneva, N. Y.

SHOULD I have a break in my fence, I prefer to discover it myself, rather than have it pointed out to me by a neighbor, and it seems fitting that a farmer should bring up for discussion a disagreeable fact that sounds a discordant note in the chorus of glorification of country life, now in vogue. None know better the many advantages of a life in the country than those of us who are so fortunate as to enjoy them. But there is no environment, no business or profession which does not have another side. The sun does not always shine in the country, and we farmers have troubles of our own which are unavoidable, and which we must accept with the best grace we can; but there are other and avoidable evils which should not be ignored, but rather harped upon till the reader, wearied by much iteration, stops and thinks; then if our diagnosis and prescription be correct, improvement will soon follow.

The particular matter that I have in mind is this: at fifty, the average farmer, as I see him, is, in appearance at least, an old man, while his city brother is in full mental and physical vigor employing his mature judgment and experience in the profitable prosecution of his business enterprises. To any such general statement there are, of course, many exceptions, but I appeal for confirmation to any country bred man who will call to mind the men who were his comrades in the district school a quarter of a century ago. This is not as it should be and is contrary to all theory and reason. A life in the open, fresh air and sunshine, the beautiful surroundings, the quiet, the wholesome food, all these should make a man well and happy.

Why is it that with the ideal hygienic surroundings, with the independence which is the producer's prerogative, with a healthful occupation, the farmer becomes senile much sooner than the man of the same stock who has been transplanted to the city and has spent his life in the nerve-racking stress and turmoil of urban life.

Let us consider some of the possible causes of this anomaly. Hard physical labor and exposure? I am familiar with nearly all kinds of work on a general farm and I do not believe that a man of normal physical development, in good health, is ever injuriously affected by necessary farm work. Even in the busy season, a normal man should be fully recuperated after a night's rest, and considering the drain upon the nervous system, farm work is less exhausting than business or professional life. Again, were hard physical labor the cause of the farmers' early senility, the shiftless and lazy, the man who prefers the rod and gun to the plow, should shine in marked contrast to his hard working neighbor. But he does not, if anything he is more nearly the typical "Uncle Ruben" of the cartoonist.

Lack of congenial companionship? Again, the man who neglects his work to foregather with his kind at the village store or the shop while he may be "one of the boys," does not show any visible signs of his juvenile attributes.

Alcoholic intemperance? Emphatically no—I know of no class of men more generally sober and moral than farmers.

Lack of nourishing food? I know of no section of our land where the farmer lacks for food, containing a sufficient quantity of nutritive units to satisfy the requirement of a most liberal dietary. Yet I believe that as a class, farmers are suffering from malnutrition. I think I am correct in stating that in the Civil War the crack city regiments, composed of men who were unaccustomed to hard physical work, withstood the severe strain and the terrible privations to which the troops were subjected, better than those from the rural districts, and the explanation given by army surgeons was, that their nutrition was superior. Why? I do
not speak as an authority on this subject, but suggest the explanation that occurs to me, hoping to elicit discussion and remedial suggestions. I believe that monotony in diet, improper preparation of food, manner of eating, dental disorders, preventing proper mastication, overactivity directly after eating; in short, dietetic intemperance, is the crying evil in country life today.

While the farm should furnish a sufficient variety of food at all seasons, as a matter of fact the farm diet is a very restricted one. It is exceptional to find a good garden on the farm. A few summer vegetables may be grown but there is seldom any great variety. I am not contending that a garden is profitable; in most cases I think that winter vegetables can be bought from someone that grows them on a large scale more cheaply than they can be grown, but if they are not grown at home they will not be on the table. Either from false economy or from that indifference to domestic needs which is too common on the farm, the wife has to provide for the family with what she can find, and she certainly has no time to tend garden. Frequently the farm is far from a market and fresh meat can be secured only at irregular intervals, so it happens that “pork and taters” are served with deadly regularity. Even with this limitation of materials much could be done by skillful preparation, to improve the wholesomeness of the farm dietary, but, while I regret to say it, I believe the average farmer’s wife is from a hygienic standpoint, not the best of cooks. There are very many reasons why this is true. As I have said, she is discouraged by the indifference of the man to her needs. When she has chopped the wood and drawn the water, often literally drawn it, because the pump won’t work, and has attended to the thousand and one things required of her, she has but a limited time for the preparation of meals, and frequently she takes little interest in the matter. For this the attitude of the man is often to blame; he assumes that it is her job to feed him, and it never occurs to him to acknowledge her efforts by a word of commendation. Often ignorant of the first principles of cookery, her one weapon in the war with hunger is the frying pan.

Some kinds of food may be properly prepared by frying—but there is frying and frying. The fried food I am deploring, is the grease-soaked, toughened product of a cold spider and a slow fire. It is a dietetic crime. But it is unnecessary to dwell upon such a painful subject. You have all at some fateful moment in your lives been exposed to such a meal and the memory will remain with you always.

To the ill-prepared meal the farmer comes, always in a hurry. No matter how slow on other occasions, he is a busy man at meal times, and if delayed a moment is in ill humor. He seats himself at the table and dispatches the business in hand with an expedition, which, if continued throughout his day, would make him a wonder in the working world. No attempt is made at mastication, and when the food will not go down fast enough, it is assisted by copious draughts of some fluid. No word is spoken, he looks only from his plate to the possibilities on the table, and in sputtering gasps between bites, asks for what is beyond reach.

This manner of eating is not justified by any legitimate demands of farm work; there is the same mad rush to finish the meal when one pushes back from the table, loaded to satiety, to sit and stare into vacancy; but however indifferent to the demands of work at other times, it is the rule to “get busy” after a meal, even if work is stopped an hour later for a leisurely chat with a neighbor.

It is the usual practice to eat the heartiest meal of the day at noon, and to resume work at once with no interval for digestion. It requires no great knowledge of the physiology of digestion, to predict the results that must follow from such flagrant violations of the laws of hygiene. The human digestive process is not comparable to a feed mill in which grain is mechanically
ground or crushed; nor to a chemist’s jar in which food is subjected to the action of the digestive ferments. As in all vital processes, we must take into account the action of the nervous system, and the influence of one part of the body upon the others. The process of mastication, mechanically breaks up the food into small particles, to facilitate the actions of the digestive fluids, while this is being done, the food is mixed with saliva, which performs an important part in preparing it for absorption and the chewing, the swallowing and the smell of food, combine to send through the nerves, a message to the stomach that there is business at hand and that it should begin preparing to digest the coming food, the blood supply to the digestive organs is increased, and they are ready for their task. But when food is bolted, the unchewed masses are thrown into the unprepared stomach, and surprised and overwhelmed, it often “goes on strike.”

It is self evident that when food is improperly cooked and imperfectly masticated, it will be improperly digested. The loss of the nutrition contained in the undigested food is of little moment, but it is important that these undigested masses act as irritants in their progress through the body, and intestinal disorders are produced. When the intestinal tract is deranged, there are formed many poisonous substances which are absorbed into the system, giving rise, according to the kind and quantity, to what is known as ptomain poisoning or to the lassitude and depression of the chronic dyspeptic. In this condition of self poisoning, while sufficient food is taken into the system, it is not prepared for absorption, and starvation in the midst of plenty results. One common symptom of these digestive troubles is an unnatural craving for food, which leads to still further intemperance in eating, and the victim of the eating habit goes on from bad to worse. But you will ask, “Why is it, that we so frequently find the farmer living to extreme old age?” It is, I think, because in a certain degree the disease tends to remedy itself. After a time the abused digestive system “goes on strike,” and the victim, if he does not die of acute indigestion, partially reforms. There are few more eloquent temperance lectures than an attack of acute indigestion. He learns that every indulgence is followed by a penalty, and his “dispepsy” makes him wondrous cautious; the diet is made a little more rational, and thanks to his environment, the farmer “enjoys poor health” for many years.

There is also, I believe, a psychic side to this old age question. Who is there who will not cut off a year or two from his apparent age if he is well dressed? He “walks up” to the new hat and gloves, as he goes down the street, and if he sees an old friend coming he carries himself so that he loses a year or two more. Now I suspect that the farmer looks to us much older than his tissues would look under the microscope. The stooping shoulders, the shuffling gait, add many years to his appearance. The indifference to looks and the bad carriage, are only matters of habit. The city man, on the other hand, is always on inspection and is constantly stimulated to look his best, lest he excite ridicule, which he dreads more than envy, hatred, malice and all uncharitableness.

From the moment the country boy goes to the city, to the day he dies in harness, he is constantly obliged to look and to be alert. The song of the electric car or ambulance is a powerful awakener, and the “slow one” in business or on the street is soon run down.

The term, “old man,” in town and country, does not convey the same idea. When a boy enters a city office he soon learns that the personage who sits behind the door marked, “Private Office,” and known as the “old man,” is the one and only thing that matters. He is the “whole thing” to that boy’s mind; and if he has dreams of ambition, they all have to do with the day when he will be the “old man.” When, in the fullness of time, he gets
there; when he is "the old man," it reacts on him, he has a position to live up to. No matter what his age—he is the vital inspiring force of that business; he may suffer no loss of acuity, or he must give place to a successor so he keeps young and active.  

On the other hand, when the "old man" on the farm can no longer pitch as many loads of hay in a day as the boys, he feels that he is a back number. In other words, the standard of efficiency in city life is mental; in country life, physical. Let us rather say was—for I am fully convinced that a new era has dawned in agricultural work. Today, farming is no longer the proposition of a laborer, but of a thinking worker. The man who can merely plow or pitch or dig is no farmer, he can at most only earn a laborer's wages. The time has come when we must have an "old man" on the farm, a man who thinks, plans, directs. Let him work hard with his hands if he will, but he must work with his head first and the material result of his thinking will be the means to surround himself with all necessary physical comforts and sufficient leisure in which to recreate himself and to learn how better to be the "old man" on the farm.

BALANCED RATIONS FOR HUMANS
By Miss Anna E. Hunn, '12

ACTIVITY, size and age are the chief factors which determine the food requirements of our bodies. The present consideration shall be in what form and proportions we should eat foodstuffs in order to meet the needs of the body, or in other words, what formula shall be given for a balanced ration for human beings.

If we know of what elements the body is composed, we can soon figure what we must supply to keep it in repair. Chemistry has informed us that the following elements are always found in the body in measurable quantities and that they are probably essential to it; carbon, hydrogen, oxygen, nitrogen, sulphur, magnesium, sodium, iron, chlorine, calcium, potassium and phosphorus. These twelve elements are constantly needed in our food. The protein which we eat furnishes the carbon, hydrogen, oxygen, nitrogen and sulphur; fats and carbohydrates furnish carbons, hydrogen and oxygen; and the vegetables and fruits, furnish the mineral matter.

Protein forms a good starting point when figuring a balanced ration, because it is the hardest for which to set a standard in the problem of amount in the diet. Work does not materially increase the need for protein, so if we once determine the amount of protein we need, we have settled the question for some time. Furthermore, the body cannot store up protein, as it can fat, so there is no need of eating more than the body requires to keep itself in good condition. Some men, as Chittenden, believe that the amount of protein in the diet should be low while others, as Atwater, take the opposite side.

Chittenden claims that only enough protein should be eaten to balance the intake and output of nitrogen. If this nitrogen equilibrium, as he calls it, is established there will be no wasting away of the body and no need of extra protein. He further says that the waste products from large amounts of protein are irritating to the tissues of our bodies.

Those favoring a large supply of protein, argue that in the history of nations we find that the strongest peoples are those who have had a liberal protein diet and that a protein diet makes the body less susceptible to disease.

Chittenden would furnish one-twelth of the total food calories in forms of protein; Atwater would furnish one-seventh in forms of protein.

Since there is such a difference of opinion, it is now considered best to take a middle course, and plan a dietary moderately rich in protein. We must choose our own course in deciding which standard to follow, but in all
It is more often found in combinations with other foods, as in vegetables, fruits, milk, eggs and whole grains. If these are eaten in abundance no thought need be given to mineral matter in the diet except in occasional cases.

Now that we have a general formula for an advanced ration for human beings, let us see how it works out. Suppose the man for whom the meals are planned weighs 130 lbs. He would need an amount somewhere between the products of 130 x 16.1 and 130 x 18 in calories, or somewhere between 2093 and 2340 calories per day. He is to have one-eighth of his total calories in the form of protein, and not more than one-half the remaining calories in the form of fat. Let us consult the tables from Dr. Fisher.

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 shredded wheat</td>
<td>100</td>
<td>13</td>
<td>4.5</td>
<td>82.5</td>
</tr>
<tr>
<td>1 slice bread</td>
<td>100</td>
<td>13</td>
<td>6</td>
<td>81.</td>
</tr>
<tr>
<td>1 serving apple sauce</td>
<td>100</td>
<td>2</td>
<td>5</td>
<td>93</td>
</tr>
<tr>
<td>1 small square of butter</td>
<td>100</td>
<td>0.5</td>
<td>99.5</td>
<td>0</td>
</tr>
<tr>
<td>1/2 cup of cream</td>
<td>100</td>
<td>5</td>
<td>86</td>
<td>9</td>
</tr>
<tr>
<td>Total Breakfast</td>
<td>500</td>
<td>33.5</td>
<td>201</td>
<td>265.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dinner</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 large serving boiled beef</td>
<td>100</td>
<td>90</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>1 baked potato</td>
<td>100</td>
<td>11</td>
<td>1</td>
<td>88</td>
</tr>
<tr>
<td>1 serving spinach</td>
<td>50</td>
<td>7.5</td>
<td>33</td>
<td>9.5</td>
</tr>
<tr>
<td>2 pats of butter</td>
<td>200</td>
<td>1</td>
<td>199</td>
<td>0</td>
</tr>
<tr>
<td>2 slices bread</td>
<td>200</td>
<td>26</td>
<td>12</td>
<td>162</td>
</tr>
<tr>
<td>2 small servings rice pudding</td>
<td>200</td>
<td>16</td>
<td>26</td>
<td>158</td>
</tr>
<tr>
<td>Total Dinner</td>
<td>850</td>
<td>151.5</td>
<td>281</td>
<td>417.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supper</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 slices bread</td>
<td>300</td>
<td>39</td>
<td>18</td>
<td>243</td>
</tr>
<tr>
<td>2 small glasses of milk</td>
<td>200</td>
<td>38</td>
<td>104</td>
<td>58</td>
</tr>
<tr>
<td>1/2 glass cream</td>
<td>100</td>
<td>5</td>
<td>86</td>
<td>9</td>
</tr>
<tr>
<td>6 prunes</td>
<td>200</td>
<td>6</td>
<td>0</td>
<td>194</td>
</tr>
<tr>
<td>Total Supper</td>
<td>800</td>
<td>88</td>
<td>208</td>
<td>504</td>
</tr>
<tr>
<td>Total</td>
<td>2150</td>
<td>240</td>
<td>491</td>
<td>733</td>
</tr>
</tbody>
</table>

We see that the food supplied would correspond closely with the amount required. The amount may be altered by simply adding or subtracting several parts of butter or slices of bread to or from each meal.

A balanced ration would not be complete without considering two other points: first, water; and secondly, bulk in the diet.

Water is an important part of every living cell, and our bodies would soon die without it. Therefore it is important to supply plenty of water to the body in some form or other. Vegetables and fruits are among the best sources of water.

The food may supply the required number of calories, but if it does not have bulk, it will not be of as much use as bulkier food supplying less calories. Bulk is supplied by fruits, succulent vegetables and whole grains.

Although the subject of diet is a broad one, we should at least consider the proportion of protein, fats, carbohydrates, water, mineral matter, and bulk, which go to make up our meals.
THE NEW AGRICULTURAL BUILDINGS

By Dudley Alleman, '14

AFTER a long period of preparation and planning, the work on the new buildings of the College of Agriculture is now in full swing. Mr. A. A. Beattie, who is a graduate of the Cornell College of Architecture, is the State Superintendent of Construction, and under him the work is being rushed apace. Two large concrete mixing machines are pouring in the material which will later be the substantial foundations for as fine buildings as can be found on the campus.

The architects for these buildings are Professors Martin, Hubbard and Young of the College of Architecture with Green & Wicks, of Buffalo, as supervising architects. All the expenses are being paid by state appropriation.

The Home Economics building, especially, is very attractive in architectural design. In front of the first floor are four large columns extending to the roof. Below are two smaller columns beside the entrance. The main part of the building is 133 feet wide by 62 feet deep. It has a marble finish, and the exterior trim is of cut stone and brick.

The basement contains a bakery, a kitchen and a laundry. Besides these, there is a story high addition at the rear of the building, which will be a Cafeteria. The basement is equipped with electricity and gas and has concrete floors thruout. On the next floor are an apartment, offices, class rooms and a library. The second floor is taken up by an auditorium and laboratories. The auditorium is 47 feet wide by 33 feet long, and has a seating capacity of about 350. This room is to have an oak floor, while the laboratories are to be covered with linoleum. The auditorium extends upward two stories, and so takes up a large part of the third floor. The rest of this floor is devoted to class rooms and to food and chemical laboratories. On the floor above are a draughting room with an oak floor, and a rest room; the remaining space is in attic.
Work is also begun on the new horse barn. This is west of the cow barn, now called the "new barn." It is about the same size as the cow barn and has somewhat the same style of construction. It consists of a main part with two wings, as the cow barn does, the main difference being that the wings flare out. This feature has met with a great deal of criticism, but it accomplishes the purpose in view; to have a court large enough for a team to turn around in, without making the main part of the barn too wide. This flaring of the wings makes the court 75 feet wide at one end and 50 feet at the other, by 110 feet long. The court opens on the Judd's Falls Road, but has a high fence in front of it to screen any unsightliness.

The wings will be devoted to stabling the horses. One wing will be devoted to the work horses. Forty single stalls will eventually be completed in this wing. The other wing will be devoted to breeding horses, and will contain twenty single stalls and ten box stalls. The single stalls will have plank floors, while the floors of the box stalls will be of earth, the passageways being concrete. This is the ultimate plan; for the present only one-half of one wing will be completed. The size of the wings is 108 feet by 43 feet. The main barn will hold a wagon storage, offices and a training room with an earth floor. This part of the barn is 120 feet by 38 feet wide. On the second floor will be grooms' rooms and also lofts and feed bins.

The plans for the Poultry building, which is now going up between the present college buildings and the barns, will be discussed in the Poultry number for December.

In addition to these buildings, a large laboratory for the Farm Mechanics Department has been built back of the Animal Husbandry building. This consists of one large room 96 feet long by 40 feet wide. Off this room there is an office, a lavatory and a farm shop. The frame and walls of the building are made almost entirely from the material taken from the old barn.
WHAT THE FORMER STUDENTS ARE DOING

During the year 1903-4, the CORNELL COUNTRYMAN made a tabulation of the occupations of the former students of the College of Agriculture, and its results were published in the COUNTRYMAN for June, 1904. A few years later, the Secretary of the College addressed a letter to all former students asking for information concerning their occupations. The results of this subsequent tabulation, are shown below.

The tabulation is based on total replies. If all former students had been heard from, possibly the results would be slightly different; but so large a number have replied it is probable that the results are fairly representative of the real conditions. In 1904, 899 replies were received, and in 1910, 1467 replies.

The replies in 1904 showed 91% of the former students in some form of agricultural work, 26% of whom were in agricultural education work. The replies for 1910-11 show 86% in some form of agricultural work, 11.45% of whom are in teaching and experiment station work.

It is gratifying to note that so large a percentage of the former students of the college continue in agricultural work, and especially in farm work.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Ph.D.</th>
<th>M. S. A.</th>
<th>Grad. Students</th>
<th>B. S. A.</th>
<th>Reg. Students, not graduated</th>
<th>Special Students</th>
<th>Undergraduate Students</th>
<th>Total Replies</th>
<th>Per cent of Total Replies</th>
<th>Per cent by Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I—Home farm</td>
<td>1</td>
<td>2</td>
<td>21</td>
<td>22</td>
<td>100</td>
<td>290</td>
<td>106</td>
<td>446</td>
<td>30.40</td>
<td>45.74</td>
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<tr>
<td>Farm Manager (employed)</td>
<td>3</td>
<td>17</td>
<td>6</td>
<td>36</td>
<td>44</td>
<td>106</td>
<td>8.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed on farms in other capacities</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>21</td>
<td>119</td>
<td>671</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total for Group I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1168</td>
<td>11.45</td>
<td></td>
</tr>
<tr>
<td>Group II—Agricultural College teachers</td>
<td>13</td>
<td>27</td>
<td>9</td>
<td>38</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>107</td>
<td>7.29</td>
<td></td>
</tr>
<tr>
<td>High, grammar and rural school teachers</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>33</td>
<td>2.25</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Experiment Station work</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>28</td>
<td>1.91</td>
<td></td>
</tr>
<tr>
<td>Total for Group II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>211</td>
<td>14.38</td>
<td></td>
</tr>
<tr>
<td>Group III—Creameries, cheese factories, milk stations, etc.</td>
<td>9</td>
<td>5</td>
<td>16</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>38</td>
<td>2.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conducting tests for official records</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>Total for Group III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49</td>
<td>3.34</td>
<td></td>
</tr>
<tr>
<td>Group IV—U. S. Dept. of Agr.</td>
<td>9</td>
<td>5</td>
<td>16</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>38</td>
<td>2.59</td>
<td></td>
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</tr>
<tr>
<td>N. Y. State Dept. of Agr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>77</td>
<td>5.26</td>
<td></td>
</tr>
<tr>
<td>Total for Group V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>78</td>
<td>5.34</td>
<td></td>
</tr>
<tr>
<td>Group VI—Homekeepers</td>
<td>2</td>
<td>5</td>
<td>16</td>
<td>23</td>
<td>1.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Editors</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>16</td>
<td>9</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Lecturers</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>16</td>
<td>43</td>
<td>2.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total for Group VI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Continued on page 62)</td>
<td></td>
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</tbody>
</table>
CROSS COUNTRY

1910 INTERCOLLEGIATE RACE

By J. L. Kraker, '12
Member of the 'Varsity Cross Country Team, 1910

The request has come to me to relate the story of a Cross Country race from the viewpoint of a contestant. As an example, I shall describe a few of my sensations from the Intercollegiate race, held at Princeton in November, 1910, and in which ten colleges were represented.

The teams of seven men each, were stretched in one line across Brokaw Field, and the crowd in town for the Yale-Princeton football game, was grouped behind, and to the sides of the contestants. At the opposite end of the field, two flags, 40 feet apart marked the first turn on the course and it was for this gap that the pack hastened at the word "Go!"

Not being a sprinter and inasmuch as the first two hundred yards was run at a sprinter's pace, I was well back in the pack when we reached the end of the field, but I realized that the race was for six miles, and so was not disheartened by a poor start.

The first mile was down hill, and so was run in fast time, but when we struck the road along Carnegie Lake, a slight upgrade was encountered. This slowed down the bunch slightly, and during the second mile I had no difficulty in working my way up to the group of leaders.

At the three mile post, however, my legs seemed to lose their spring, and a slight cramp caught my left calf. This made me drop back slightly, and a Princeton man who was trailing the leaders noticed my slackening, and tried to pass me. Thus aroused, I found to my surprise, that I had no trouble in holding off my challenger, and instead of being passed, worked back into the leading pack with my second wind working finely and my legs plodding methodically along, but with a certain spring in them which kept me near the leaders.

About this time, those men who had started out too fast started to drop back, and others taken with cramps, found the leaders pace too stiff, and so the leading pack was cut down to about 15 contenders, with the other runners, strung back for about one-half a mile distant.

At the beginning of the fourth mile we encountered the steepest hill on the course. Going up and at the top of this incline all of the Cornell team sprinted, as we had agreed to on the previous day while exploring the course, and we all improved our positions. It was at this point that Jones and Berna, who finished first and second respectively, started to leave the first pack, and they stayed in front to the finish. The rest of the bunch had quite a tussle for the lead, and while all of the Cornell team was not in front of all the others, still we were close enough to carry the cup to Ithaca for another year.

Cross country is essentially a sport for the Agricultural student. It deals with the open country and requires these same qualities for success which go to make up the successful farmer, namely: head work, a certain amount of plodding, and a lot of stamina and pluck. Any man can succeed at the game if he'll work faithfully, and it is up to all agricultural students to get out and train for the Intercollegiate race and get back the cup, which Sibley won last year. Run with the bunch and in all the practices remember that old saying—"The other fellow is as tired as I am."

Therefore, turn out, students of Agriculture, and support this year's college cross country team and we'll start now to show Cornell that the Ag College is to the University as Cornell is to the Intercollegiate world—supreme in cross country.
AG’S PROSPECTS IN THE INTERCOLLEGE

By W. D. Hazelton, ’12
Member of the Varsity Track Team

NOW that the cross country season is here again and the interest in the sport is aroused, we naturally think of the Inter-college race. We wonder what the chances are for a victory for Agriculture, and naturally turn to the past as an indication of what the future will bring. Judging from the outcome of the Inter-college race for the past two years, we can confidently say that Agriculture will make a good showing. Aside from what the last two years have taught us, there are many advantages that we have over our rivals for the Ehrich Cup. The everyday life of a student taking Agriculture is better adapted to the developing of a cross country man than the routine of most of the other colleges. Take the course in Farm Management for example. A month or so of the excursions with that class, and a man will be a first-class cross country man. The walks to Varna and other adjacent (?) towns are at least conducive to the development of endurance. The surest way to develop a winning team would be to make Farm Management a prerequisite to the cross country course. But upon looking up the records of the cross country team for the past two years we find they are encouraging at least. Two years ago the team won first place in fine style. Of the five men that scored at that time, two have since made good on the varsity and helped Cornell with the big Intercollegiate race at Princeton last year, and will no doubt repeat their success of last year again this fall. Of the seven that scored for the college of Agriculture last year, all are still eligible for this year’s team, except for the fact that there are several of them that are very likely to make good on the varsity squad. There is going to be plenty of room for new material, as the fact that a man has been on last year’s team does not necessarily give him a place on this year’s team. There is no limit to the number of men that can start in the race, and every year several places are taken by men who were surprised to find it in them to make good. A new man should not be discouraged at the beginning of the season if he finds himself unable to keep up with the rest of the bunch. Give yourself a chance and you will surprise yourself. If you do not make good this year, do not give up, but be “on the job” at the very beginning of next season, and redouble your efforts. Unlike a poet, a cross country man is made, not born. So get out with the squad and help Agriculture win the Ehrich Cup. The other colleges are expecting it of us, so don’t let us disappoint them. Remember the slogan “Everybody out for Agriculture”, and we will get the cross country banner and the Intercollegiate Championship banner as well.

TRAINING

By S. H. Stevenson, ’12
Member of the Varsity Cross Country Team, 1910

In order to run Cross Country, one must have plenty of strength and endurance. As most of Cornell long-distance runners never took part in athletics before they came here, they developed these qualities by training. Thus, training is the essential thing for the athlete. The beginner should start easy at first, not running too far or too hard. He should avoid running long distances on the toes, but rather land on the ball of the foot, often letting the heel touch the ground. Do not run the same distance every day but alternate between short and long distance running, the shorter distances being speedy, while the longer ones are slower and develop more endurance.

Long easy walks should be taken at least once a week.

Sleep is one of the important factors when training and regular hours should always be observed.

In regard to eating, take only those foods which seem to agree with you, and never eat hurryedly. Such things as fried or greasy foods, fresh biscuits, pie, heavy desserts and candy or other sweets should be tabooed. Further details can be gained from “Hints on Training” by “Coach” Moakley.
With the unprecedented growth of the student body of our College during the past few years, it seems inevitable that the methods of some of our student organizations should need remodeling to make them capable of the best service, under present conditions. In the earlier years of the College, student interests were less varied, and smaller numbers made for unity of organization. The Agricultural Association was the logical meeting place for the members of a student body of not more than two or three hundred, and its discussions and elections were probably in fair degree representative.

With the new conditions, the Association touches the lives of the students much less closely than in former years. Our increased registration brings student problems of increasing difficulty, which necessitate larger and better service from the student organizations, and we should all do our part in helping to make the association as efficient as possible.

The feature of the Association, which, as now conducted seems to need most immediate change, is the semi-annual election. At present the elections held at regular association meetings, are not attended by more than fifty to seventy-five students out of a total of about seven hundred. It seems impossible to get a real expression from the student body by these methods. Men will not turn out in large numbers to these evening meetings on the hill and the election is left in the hands of a very small number of men. To make the elections more representative, a complete change of method would seem, perhaps, to be advantageous. By means such as are used by the College of Law, and in class elections, more publicity could be given the candidates, and a more representative vote secured. The systems referred to include nominations by petition, and election by ballot, at some polling place open during specified hours of an appointed day.

At the last meeting of the Association, this matter was discussed, and a committee appointed, which is to report at the next regular meeting with some definite recommendation. It is sincerely hoped that all who have the welfare of the Association at heart will give this matter careful thought, and keep in touch with the Association meetings at which it is discussed.
have now come to be a vital factor in
the activities of the College, and
deserve the hearty interest and support
of all the students. Special efforts are
being made to make this a most success-
ful year for the Clubs, and toward this
end G. W. Peck, '12, a member of the
Varsity Glee Club, has been secured as
director of the Glee Club; and F. A. C.
Smith, '12, a member of the Varsity
Mandolin Club, as director of the
Mandolin Club. Any man in the Col-
lege who is musically inclined should
consult with one of the directors of the
respective Clubs in regard to joining
them now, as there is still room in both
clubs for a few good men. Besides the
social advantages, training is given
which often enables a man to make the
Varsity Club another year.

The
Ag
Tax

Every student in the
College of Agriculture
is a member of the Ag
Association which is
the student organiza-
tion formed to regulate and govern
their affairs and activities in the Col-
lege. It is necessary for the best
development of these activities that
they should have financial support.
Good coaches are necessary; we should
have good music at the assemblies;
athletic equipment is essential if we
are to win again the athletic series.
The money raised to finance these
activities takes the form of annual dues
of one dollar to the Association.
Every member of the Association is
expected to pay this Ag tax, which is
the only support asked during the year.
The members of the Tax committee are
sacrificing their time to assist in this
cause. It is our duty as Ag students
to pay them when first approached and
thereby make their work as light as
possible.

The
Announcer

We are indeed glad
to announce a new
publication in the Ag
College, which sup-
plies a long felt need.

This paper known as The Announcer
has a purpose which is best expressed
in its own words: "The Announcer
is to be published for the purpose of
acquainting the people of the State
with the kinds of work that are in
progress by the State College of Agri-
culture. It will announce the investi-
gation, the pieces of extension enter-
prises on farms and with the people, the
forthcoming bulletins, the reading-
courses, the local schools, and other
events and programs of which the
public should have knowledge and
which are not announced in the usual
publications of the College.

It is specially desired to give the
people the gist of the Experiment Sta-
tion bulletins. Bulletins of general
interest will be sent to the entire mail-
ing-list as heretofore; but the mailing-
lists are now to be classified, and bulle-
tins on special or local subjects will be
mailed regularly only to those names
that are on the special lists for the given
subjects. All these special bulletins
will be briefly reviewed or summarized
in advance in The Announcer; and any
person not on the special list who
wishes to secure a copy of the bulletin
may secure it by writing for it. It is probable that the
abstracts or conclusions published in
The Announcer will give sufficient
information on the results of the experi-
ments to meet the needs of the greater
number of readers.
The Trustees' Committee

On Saturday, October 21st, Dean Bailey appeared before the full board of trustees of the University and outlined plans which he thought would benefit the College of Agriculture. As a result of the discussion, Ex-President White offered the following resolutions which were adopted:

"In accordance with the request of a committee of Alumni of the State College of Agriculture, Director Bailey having been invited by this Board to appear before it and make suggestions with reference to the organization and administration of the State College of Agriculture, and he having come before the Board and made such suggestions, most of which met the approval of the Board; and Director Bailey having been urgently requested to withdraw his resignation and to which request he still declined to accede,

"Resolved, That a committee of six be appointed by the chair to consider in conference with Director Bailey, and so far as possible formulate into a working plan his recommendations; that said committee be directed, in behalf of this entire Board to urge upon him the desirability of his remaining so as to cooperate in carrying into practical operation such new methods of management and administration as may be adopted.

"Resolved, That said committee report at the next meeting of this Board."

The chair appointed as such committee, Trustees White, Wilson, Carlisle, Sackett, Mason, and Hiscock.

The Alumni are greatly interested in this action by the Trustees, as they earnestly desire to see such adjustments made as will result in the most effective administration of the College.

The Students' Association is actively encouraging the organization of the former students of the College into county branches or chapters. The first local organization to be established was the Long Island Branch, formed last winter. As we go to press, Monroe County is just completing its organization, and three other counties are taking the initial steps. Several counties in addition have the question under consideration.

It is hoped that a considerable number of counties will have their organizations perfected before the next annual meeting of the Students' Association in Farmers' Week so that they can begin their work this winter. County lists will be furnished on application to the Secretary at the College.

Such county branches will serve to hold the Cornell men in a given section together so that they may be mutually helpful. They will afford a means for the College to deal directly with a considerable number of former students. Such branches as desire can invite the travelling extension schools from the College to be held in their locality. Farm demonstration work, co-operative experiments, rural improvements, reading-courses, and any number of other lines of work may be taken up in cooperation with the College, not to speak of the items of special local interest that will grow out of the association of such a body of men and women. The Countryman bespeaks a hearty response to this splendid movement.
FORMER STUDENT NOTES

VAUGHN MAC CAUGHEY.

'08, B.S.A.—Vaughan Mac Caughey was born at Huron, South Dakota, but received his early education at Greenville, Ohio, graduating from the high school there in 1904. Funds for his college course were obtained by giving local lectures on biological subjects. In June of the same year he attended the summer session at Cornell, and entered the agricultural college in the fall. He was student assistant in entomology for three years and president of the Jugatae in his senior year. While in college, he was also lecturer in farm extension work and teachers' institute work, and instructor in nature-study at the Chautauqua summer session in 1906-7.

In February, 1908, he went to Hawaii as head of the department of natural sciences in the Territorial Normal and Training School, Honolulu, and was later made vice-principal of the school. Mr. Mac Caughey is a member of many scientific and other clubs or associations and an officer in several of them.

On Thanksgiving day, 1909, he married Miss Janet H. Brooker, (Syracuse and Columbia Universities) of Newburgh, N. Y. Since February, 1910, he has been assistant professor of Botany and Horticulture and in charge of this department as well as the extension work at the College of Hawaii. He was also visiting professor in charge of nature-study at the University of California, summer session in 1911.

'09, A.B. and Sp. Ag.—Miss Sarah M. Bailey, daughter of Dean Bailey, was married on Monday, Oct. 16th, to Mr. Horace P. Sailor of Detroit, at Dean Bailey's residence on Sage Place. Mr. Sailor is a graduate of the College of Mechanical Engineering, class of '06.

'11, B.S.A.—Lewis H. Schwartz has been appointed an Instructor in Poultry Husbandry at the University of Wisconsin, Madison, Wis. and will be general assistant in that department.

'05, B.S.A.—G. Wendell Bush was married on Wednesday, Aug. 23d, to Miss Meta Elizabeth Smith, daughter of Mr. and Mrs. Irving D. Smith, at Oseo Lodge, Monroe, N. Y.

'05, W. P.—Osborne E. Britten is at present part owner and manager of the Britten-Ellis Poultry Co., Manlius, N. Y. The firm handles incubators and brooders and other poultry supplies, sells baby chicks and raises considerable poultry.

'06, W. P.—A. Campbell Herrick now has charge of the poultry on the Riverview Dairy and Poultry Farm, at Ossining, N. Y.

'07, Sp.—Alva C. Spencer was married on Wednesday, Sept. 2oth, to Miss Edith McLennan, daughter of Dr. and Mrs. Roderick C. McLennan, at Fayetteville, N. Y.

'09, B.S.A.—E. L. D. Seymour, editor of the COUNTRyan in '08-'09, has recently been made manager of the Land Department of the Worlds Work, published by Doubleday, Page & Co., Garden City, Long Island, N. Y. The
object of this new department is to help the right persons to get on the right land. This will be done by articles from successful farmers and descriptions of farms, reclamation projects, etc. The department also wishes to be more or less a clearing house on agricultural questions.

'99, A.B.—H. M. Fitzpatrick is now an instructor in Plant Pathology. The State Legislature has appropriated $1,000 for further investigation of gladiola diseases and this work is to be continued under the direction of Mr. Fitzpatrick.

'00, B.S.A.—Ralph R. Root is taking work in the Harvard School of Landscape Architecture again this year.

'00, B.S.A.—Miss Elizabeth Leonard is at present at Kingston, Mass. She is spending about four days out of the week doing work in connection with city planning, with Mr. John Nolen of Cambridge, Mass. The remainder of the week is spent in design work for Miss Holmes' nursery at Kingston, making herbaceous perennial flower gardens a specialty. Miss Leonard has done considerable garden designing abroad in the employ of Miss L. Dunington of London, England.

'01, Ph.D.—Errett Wallace has been employed by the U. S. Department of Agriculture to carry on special investigations with fungicides and in determining the injuries resulting from their use.

'01, B.S.A.—Lindsley H. Evans is assisting Mr. Wallace in his investigations.

'01, W. P.—Mr. B. F. Brocksapp has had charge of the incubator work on a large poultry farm owned by W. J. Conners, Angola, N. Y., during the past season. His address is Angola, N. Y., care Mr. Herman Jelfield.

'01, W. P.—Miss Clara M. Chase is teaching this year in the high school at Albion, N. Y. She raised about 1000 chickens this last season and plans to give part of her attention to poultry, along with her teaching.

'01, W. P.—Mrs. Jeannette O. Prescott is running a rural poultry farm at Springville, N. Y. She has been very successful during the past season.

'01, W. P.—J. S. Wright has purchased a place at Barnard, N. Y., and has been successfully raising poultry this summer. Mr. Wright is chairman of the committee on organization of the Winter Course Poultry Association.

'01, Sp.—James G. Cochrane is now running the home farm at Ripley, N. Y. The farm is located in the Chautauqua grape belt and grapes are the main crop.

'01, B. S. A.—C. F. Ribsam, who was business manager of the Countryman last year, has gone into partnership with his father in the seed business. His address is 27 Wall St., Trenton, N. J.

'01, B. S. A.—Wayne H. Rothenberger is teaching this year in the Perkiomen Seminary, Pennsburg, Pa.

'01, B.S.A.—Harry Sonnenfeld spent the summer in traveling thru Europe. He returned here soon after the opening of college to pursue work for an M. S. A.

'01, M. S. A.—On July 5th, a daughter was born to Mr. and Mrs. L. B. Cook. Mrs. Cook (nee Miss Ora Smith) took a winter course in Home Economics in '08-'09.

'01, B. S. A.—George B. Birkhahn has charge of the bottling department on a certified milk and stock farm at Morristown, N. J.

'01, B.S.A.—Thomas Bradlee is in charge of the agricultural work at Smith's Agricultural School, Northampton, Mass.

'01, Sp.—Samuel P. Coker is at present located at his home at Society Hill, S. C. He is doing plant breeding work for the Coker Seed Co.

'01, B. S. A.—David Fink has been appointed assistant in the Department of Economic Entomology.

'01, B. S. A.—Miss Elizabeth F. Genung is teaching agriculture in the high school at Tully, N. Y.

'01, B.S.A.—Arthur K. Getman is teaching agriculture at Cortland Normal School.
William Orr Lidgate, '13

William Orr Lidgate, a junior in the College of Agriculture, died quite suddenly on the evening of October 9th, at the Cornell Infirmary. The cause of his death was acute Bright's disease, and hypostatic pneumonia, developing after an operation for appendicitis.

Mr. and Mrs. Lidgate, the parents of the student, who reside in Hawaii, were fortunately visiting in Peterborough, Canada, at the time, and were able to be with their only child for two or three days preceding his death.

Short services were held at the Chi Phi fraternity on the 10th, and the body was then taken to the home of relatives at Peterborough, Canada, for burial.

Lidgate was twenty-one years old, was born in Hawaii, and graduated with first honors from Oahu College, Honolulu. He entered Cornell soon afterward, and was here a member of Chi Phi fraternity, assistant manager of baseball, and had a good record as a student.

He will always be remembered as one who delighted to aid a friend behind his back, as one who performed any act, whether it was a regular duty or some special favor, quietly and well, and then kept the deed unknown. Prosperity could not change his attitude toward men; the service of his fellows was his aim. His many friends here in the College extend their sincere sympathy to the bereaved parents.
CAMPUS NOTES

CALENDAR

Nov. 6 Regular meeting of the Lazy Club.
Regular meeting of the Round-Up Club.

Nov. 10 Regular meeting of the Poultry Association.

Nov. 13 Regular meeting of the Lazy Club.
Regular meeting of the Round-Up Club.

Nov. 14 Frigga Fylge meeting.

Nov. 20 Regular meeting of the Lazy Club.
Regular meeting of the Round-Up Club.

Nov. 21 Regular meeting of the Agricultural Association.

Nov. 25 Intercollege Cross Country Race.

Nov. 27 Regular meeting of the Lazy Club.
Regular meeting of the Round-Up Club.

* * *

The first assembly of the year on Thursday, October 5, brought out a crowd which filled the auditorium to overflowing. The musical program consisted of a solo by Miss Clara W. Browning, '12, and another by G. W. Peck, '12. Dean Bailey then delivered an inspiring address, a welcome to the new students and a greeting to the old. In the course of his remarks he said that the man who plans to be a farmer must be suited to the work. If a man's liking is for some other employment he should not follow farming as an occupation.

* * *

The "Get Wise" meeting for freshmen was held in the Auditorium on Oct. 2d. H. B. Knapp presided, introducing as the first speaker, Secretary A. R. Mann. Subsequent talks followed on Frigga Fylge, Miss A. E. Hunn, '12; The Honor System, David Elder, '12; Departmental Clubs, F. E. Rogers, Sp.; Musical Clubs, E. V. Hardenburg, '12; Cornell Countryman, A. H. White, '12, and G. M. Butler, '12; Athletics, W. R. Wilson, '12; Cross Country, S. H. Stevenson, '12; Soccer H. B. Rogers, '12; Student Conduct, W. H. Hook, '12.

After the meeting the freshmen organized their class and elected as president, pro tem, H. M. Stanley.

* * *

The outlook for soccer this year is fairly bright. Altho many of the men on last year's team were lost by graduation, a number of good players have come to light among the large squad of candidates for the team. A very stiff fight is anticipated but it is hoped that the Agricultural team may again be able to capture the championship.

The scores to date are as follows:

Oct. 12—Ag. 1, M. E. 1.
Oct. 16—Ag. 0, M. E. 1.
Oct. 17—Ag. 2, Architecture 0.
Oct. 19—Ag. 3, Vet. 0.
Oct. 26—Ag. 2, Law 0.
Oct. 27—Ag. 0, C. E. 0.
Oct. 31—Ag. 1, Arts 0.
Dr. Gilbert attended a conference recently in Buffalo with Mr. Geo. H. Stevenson, secretary and general manager of the National Corn Exposition. At this meeting plans were discussed for the next exposition which will be held in Columbia, South Carolina in February, 1913. Professor Gilbert is vice-president of the exposition for New York State. Prof. Gilbert has also been elected chairman of the Score Card Committee of the National Corn Exposition.

* * *

Prof. Harper has just published his new book, "A Manual of Horse Training..."
The book contains some 500 pages and is well illustrated.

C. P. Smith has been appointed assistant in the Plant Pathology Department. He comes from a Field Laboratory at Youngstown, where experiments on peaches and plums are being carried on.

At a meeting of those interested in the Agricultural Cross Country team, held on October 10th, W. R. Wilson, '12, was unanimously elected captain and O. B. Kent, '12, manager for the coming season.

On Thursday, October 5, the Department of Home Economics was at home to all women students in the college in order to establish an acquaintance early in the year.

H. B. Knapp, '12, President of the Agricultural Association, addressed a farmers' meeting at North Rose on "Apple Production." The meeting was arranged by Rev. Mr. Langford of the Presbyterian Church.

Two student laboratory assistants have been added to the Home Economics Department: Miss Clara Browning, '12, and Miss Bertha Betts, a graduate of Pratt Institute, 1911.

Professor Fippin of the Soils Department, addressed a farmer's field meeting on October 1st at Marathon.

Professor Cavanaugh spoke before the West Henrietta grange on Soil Fertility.

C. P. Alexander, '13, has been appointed assistant in Biology.

AG BASEBALL TEAM.

Top row, left to right—W. Turnbull, T. C. Murray, E. C. Auchter, T. J. Whitney, F. E. Rogers, L. C. Pritchard.
Bottom row, left to right—H. H. Knight, W. R. Wilson, D. D. Ward, E. A. Brown.
The third annual Conservation Congress was held this year at Kansas City, Sept. 25-27. Experts from many of our agricultural colleges and experimental stations were in attendance. Among the speakers at this Congress were President Taft, Dr. H. W. Wiley, Mr. Wm. J. Bryan, and Judge Lindsey. The points especially emphasized were, first, the need of more scientific management of our soil to check depletion, and second, the importance of developing better rural social conditions. For years our virgin soil has been wastefully used and only recently has the nation been awakened to the importance of the conservation of soil and the restoration of fertility to "robbed" lands. As to the second point, our rural life, it was the consensus of opinion that the position of the farmer's wife could and should be improved.

The American Land and Irrigation Exposition will be held in Madison Square Garden, New York, November 3 to 12. This exposition was organized on the theory that if the desired instruction is given to immigrants and the sweat shop population, they will flock to the South and West. Illustrated lectures will be given to supplement the exhibition of farm products and farms, orchards and irrigated tracts will be allotted. A large sum has been raised that New York State may also be well represented.

Complaints have been received from settlers on Reclamation projects that by reason of the misrepresentations of land agents they have been induced to purchase lands which were afterward found to be without any rights to water from the Government canals. The Secretary of the Interior today issued the following warning which, while it refers particularly to the Rio Grande Project in New Mexico and Texas, is equally applicable to other projects containing large areas of private lands:

"All persons are warned against accepting any statements concerning this project, without inquiry from the officers of the Reclamation Service. Experience has shown that some warning of this kind is necessary because misleading statements have been issued regarding the project and the conditions existing upon it. The project has many advantages and would not have been taken up and pushed unless it was considered feasible and worthy of development. These facts, however, do not warrant certain exaggerated statements which have been made."

The National Dairy Show was held in the Union Stock yards at Chicago, Oct. 26 to Nov. 4. Over 1000 head of the best milch cows were exhibited and judged by competent authorities from the agricultural colleges and experimental stations of the country. The latest inventions in dairy machinery and the finest of dairy products were seen at this show.

Visitors to the Pacific Coast in 1915 will be given an opportunity of visiting two great Panama Expositions in California, one an international World's Fair, at San Francisco, and the other a Panama-California Exposition, at San Diego. At the latter exposition irrigation, manufacturing, and display of the natural resources are to be featured.

The New York State Agricultural Law relating to the sale of insecticides and fungicides has been amended and broadened in scope. The former law provided for inspection for insect pests but the only plant disease specifically mentioned was Black Knot of plums. The present law provides for inspection for, and, if necessary, quarantine against, Black Knot of plums or "any other dangerous fungous growth."
Occupation.

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BOOK REVIEWS

**Manual of Farm Animals**, by Merritt W. Harper, Assistant Professor of Animal Husbandry, Cornell University. Published by the Macmillan Company, New York City; 532 pages; 177 illustrations; price $2.00 net.

As a manual, this book is invaluable to the stockman; it considers common practical matters in much detail, giving advice that has been derived from actual experience. The different class of farm animals are treated as to feeding, breeding, general management and diseases. The main characteristics of the different breeds are discussed in this connection. Much help can be derived from the numerous illustrations. No one interested in Animal Husbandry should be without this book.


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Morrill Hall on the Campus
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**SUBSCRIPTION PRICE, $1.00 PER YEAR**

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Copyright by the Cornell Countryman
POULTRY Husbandry is old as an art but new as a science. Man has kept hens since the history of animal domestication began. His methods were by rule based upon tradition, rather than upon principles founded upon scientific investigation. In other words, until recently, man has kept poultry on the "cut and try" plan. Now certain basic laws governing animal nutrition, inheritance and behavior are understood and applied. As a result of this coupling of the "how," the art, with the "why," the science, Poultry Husbandry is gradually advancing out of a minor agricultural industry into one of large commercial importance. Where formerly a few "barn yard" fowl existed now many large flocks, containing many thousands of fowls, ducks, etc., are managed successfully.

These changes have been brought about through increased knowledge, as a result of the application of science to every day practice. The sciences of chemistry, anatomy, physiology, pathology, embryology, physics, climatology, etc., have all contributed their share to our knowledge of how to feed, house, breed, hatch, brood, care for and market poultry. By the aid of science we have been able to overcome, in a measure, the natural limitations of Poultry Husbandry; that is to say, the short life and small size of the individual poultry unit, which limitations found expression in the difficulty experienced in rearing and handling poultry in sufficient numbers to make it worth while commercially. While we have made great advances, much yet remains to be done.

What the development of the domestic fowl is to be will depend upon two great controlling factors, her environment and her keeper. The former includes the soil, food and climate, and the latter, man's intelligence, enterprise and education. These two factors are interdependent, each reacts upon the other and both react upon the fowl. The hen is largely what the environment and man make her. Creation has only begun.

In the domestic fowl we have a good foundation upon which to build. Our environmental conditions are unexcelled. Hence, what the domestic fowl of the future is to be will rest with man. A large responsibility lies with each of us to do our part in improvement. This is our reasonable obligation.

Poultry Husbandry has much to contribute to human welfare. It supplies important food products for the sustenance and satisfaction of the race. It assists materially in maintaining soil fertility. It furnishes profitable employment and provides out-of-door occupation for millions of people. In all these respects Poultry Husbandry is doing its share toward furnishing a livelihood by which families survive, children are educated, the government is supported and civilization is advanced. Thus is Poultry Husbandry one of many worthy occupations by which man is enabled to do his work in the world.
THE NEW POULTRY HUSBANDRY BUILDING
By James E. Rice
Professor of Poultry Husbandry at Cornell University

The Poultry Husbandry Building, now in process of construction at Cornell, is the result of a special appropriation of $90,000 made by the New York State Legislature of 1909-10.

Ninety thousand dollars is by far the largest single appropriation ever made for educational purposes in Poultry Husbandry. It has set the pace and established a precedent which will enable other educational institutions to secure similar or larger appropriations in the near future. In thus showing its faith in Poultry Husbandry, by recognizing it as a subject to be taught and investigated on the same plane as other departments in an Agricultural College, New York State has placed herself in the front rank in the matter of developing her poultry interests. The action of the Legislature reflects credit upon the progressiveness of the people of the Empire State in thus taking advance ground in the support of the poultry department of the College.

The appropriation for the poultry building was made possible by a fortunate combination of factors. These factors were, first, the people of the state, from country and city alike, who, individually and through poultry associations, granges and other organizations, and the press gave their hearty support. This was particularly true of the officers and members of the New York State Branch of the American Poultry Association. The Secretary-Treasurer and later the President of the organization, Dr. E. M. Santee, introduced a resolution at the annual meeting held at Ithaca, Farmers’ Week, 1909, recommending to the Director of the College, to the President and to the Board of Trustees that the Legislature be asked to make an appropriation of $90,000 for a poultry building. The Poultry Department was requested to prepare plans for a building which would meet its needs. This was done and it was found that it would cost approximately $90,000, not including equipments and several auxiliary buildings. The authorities at Cornell accepted the estimate and united in asking the Legislature for the sum required.

It will be impossible to mention, in this short article, the names or to discuss the part that each of the large number of persons took in support of the bill. However, a group picture of the eight poultrymen who appeared at the Legislative hearing in Albany...
especially to speak in favor of the appropriation for the Poultry Husbandry building is here shown. They represented associations and interests in widely separated parts of the state. Dr. E. M. Santee as President and Dr. Stanley Merkley as Secretary-Treasurer gave efficient leadership for the poultrymen of the state.

The responsibility and the credit for the appropriation should be shared by the farmers, those in authority at Cornell, the members of the Legislature and the Governor of the State, Governor Hughes. Without the sympathetic interest and hearty cooperation of all these the appropriation undoubtedly would not have been made.

It should be said that fundamental to the securing of the appropriation was the pride of the people in their State College of Agriculture and their faith in Director Bailey. The new home of the Poultry Department, therefore, is due, in large measure, to the good work of the College as a whole which has won the confidence of the people and secured their hearty cooperation in the cause of agricultural education.

The plans of the building here shown were prepared by the Department of Architecture and the Department of Poultry Husbandry at Cornell, and with Green & Wicks, supervising archi-
tects, Buffalo, N. Y. Because this building was the first of its size to be designed, it was necessary to blaze out practically a new trail in the planning of poultry husbandry buildings.

The building was planned to meet the requirements of the four principal activities of the Department; namely, (1) administration, (2) teaching, (3) investigation and (4) extension.

This required provision to be made for handling large classes of two or three hundred students or more in lecture courses and proportionately large sections in laboratory work and in the practice (handicraft) courses; to handle the administrative affairs of managing a large producing plant and the storage and sale of products; to provide facilities for experiment and research work in the field, pen and laboratory and to prepare for use, throughout the state, in extension activities, the most useful information available in concrete and teachable form.

The building is now in the process of construction southeast of the Carnegie Filtration Plant on the second plateau of the Roberts pasture. The foundations are complete much of the iron work is in place and the outside walls are assuming shape. It faces the south, overlooking the eastern portion of the athletic field.
The structure is rectangular in shape, 132 feet long and 48 feet wide in the central portion, and 37 feet wide at the east and west ends. It contains a basement, three stories and an attic. It is planned eventually that there will be loggias extending from each end of the main building, and leading to a judging pavilion to the westward and to an incubator building and brooder houses to the eastward. These buildings will be one and one-half stories high without basements and will extend north and south, the front end on the same line as the front of the main building.

The first story of the main building and the extensions will be approximately on the same level as the main Agricultural College group. This location required a large amount of excavation. The soil thus removed is being used in making a plateau to the north of the Poultry Husbandry Building and the proposed annexes. On this plateau will be erected the auxiliary buildings consisting of laying and fattening houses, feed house, brooder houses, breed observation house, detention ward, and infirmary. These buildings will be used exclusively for teaching purposes including student research and experiment.

The chickens will be reared; the breed testing project will be carried on and the regular investigational work will be conducted on the fifty acre poultry farm north of Forest Home, about three-quarters of a mile from the teaching plant.

The entrances to the building are all approximately on the ground level. They are at each end and the front and back of the first floor. The main entrance is on the south side in the center of the building. A large vestibule opens into a main corridor which extends through the entire building, east and west. At the juncture of the corridor and the vestibule is a rotunda which provides a landing for the two stairways leading to the second floor.

The building was designed with the object in view of segregating, as much as possible, the practice work from the lecture and laboratory types of instruction and to keep these from interfering with the administrative and investigative activities. Hence the first floor and basement are given over entirely to the practice courses, locker rooms, lavatories, receiving room, storage, carpenter shop, laundry, killing room, egg handling and testing rooms and to the commercial phases of administration. This arrangement makes it possible for the students to enter the building on the ground level and pass freely through the building in four directions, to and from the auxiliary buildings, lockers and lavatories.
without going up or down stairs and therefore without interfering with the activities on the upper floors.

The second floor is reached from the first floor by two stairways in the center of the building. On this floor are a general office and five private offices, each of which, with one exception, is provided with a private laboratory. Here also is a general research laboratory, a library, an exhibition room, a seminar room and a small recitation room for special courses. On either side of the rotunda are a woman's rest room and headquarters for the Cornell University Poultry Association.

The third floor is reached from the main hallway in the center of the building by two staircases. This floor contains a large lecture room having a seating capacity for nearly three hundred persons. Two large laboratories, a photographic room and a recitation room with movable seats occupies the remainder of the floor. The recitation room serves also as a meeting place for the Poultry Association and the Winter Poultry Course Club.

An elevator shaft extends from the bottom to the top of the building near the north side, opening in the basement in the receiving room and on each of the floors where stock and appliances can be removed most conveniently to the lecture rooms, the laboratories and the exhibition room.

The main building, the extension and the auxiliary buildings, when completed as planned, will provide accommodations for teaching at one time one hundred or more winter course students and nearly three hundred regular and special students in the elementary lecture, laboratory and practice courses.


1—S. L. Cole, Oneonta, N. Y.
3—John Jeannin, West Sand Lake, N. Y.
5—Jacob P. Miller, Syracuse, N. Y.
7—Robert Seaman, Hicksville, N. Y.
2—John D. Jaquins, Watervliet, N. Y.
4—Dr. Stanley Merkley, Buffalo, N. Y.
6—Dr. E. M. Santee, Willsboro, N. Y.
8—I. L. Whitmyre, Schenectady, N. Y.
YESTERLAID UNIT METHOD OF EGG FARMING

By Rolla C. Lawry, B.S.A., '09
Manager of Yesterlaid Egg Farms Co., Pacific, Mo.

How large a flock of hens can we keep together to yield the optimum return on our investment? Where is the point of diminishing returns? These are questions which confronted the Yesterlaid Egg Farms Company when it established its plant at Pacific, Mo.

The optimum return is represented by the greatest number of eggs that can be had for the least expenditure of labor and feed.

It is quite generally agreed that one of the greatest items of expenditure in operating a poultry farm is for labor. Realizing this, it seemed to the management that if a large commercial poultry farm was to be successfully operated it must be by some system whereby the amount of work done by one man could be greatly increased over what was generally expected as the individual limit.

There are in the United States today what is accepted as the two conventional or standard plans for housing and yarding laying hens, i.e. the continuous, or series house plan with single or double yards, and the colony house plan with restricted or unrestricted range. It is by means of a specially designed house and a combination of these two basic plans for handling hens that Yesterlaid Egg Farms Company has so successfully built up its plant of units of 1000 hens.

Where the flocks are yarded, the labor required in caring for them and in keeping the runs renovated is greater than the average returns will warrant. Where the hens are allowed free range, there is a waste of energy on the part of the hens and loss of life and eggs which make this principle unprofitable.

It was after carefully considering and weighing all of these matters that the management conceived the idea of combining all of the good ideas of the various plans of housing and yarding and embodying them in a house which would at once be a colony unit with limited range and possess all the conveniences of a continuous house. The Yesterlaid unit system of Hendwels (The House of a Thousand Leghorns) and enclosed range, then, is an attempt to combine in one, all of the good features of the several conventional plans of poultry management.

An attempt will be made in the limited amount of space allotted for this article to set forth the salient principles of the Yesterlaid unit method of egg farming.

BROODING AND HATCHING.

All hatching is done with a Mammoth Incubator. Eggs are put into the machine once a week, so that there is a continuous stream of chicks coming from the incubator during the hatching season. From the incubator they are taken to a double brooder house two hundred feet long, equipped with a hot water brooding system, which will accommodate twelve thousand chicks at one time.

Throughout the incubator and brooder, strict prophylactic measures are observed, so that from the time the eggs are put into the machine, until the chicks are taken to the open range there is not a chance for disease to creep in. The incubator and brooder are arranged so that each compartment can be quickly and easily cleaned and disinfected.

The chicks are allowed to stay in the brooder house until they are thoroughly feathered and the sexes separated. In this way every possibility of them becoming chilled while they are of tender age is avoided. They are never allowed to go out of doors until they are taken to the range houses. By having the indoor runs roomy and supplying fresh untrampled greens, in the form of lawn or rye clippings, sturdier more rapid growth is obtained and the mortality is also much less.
RANGE RAISED.

When the sexes are separated, the females are taken to the range houses, where they are given range over fields of growing crops, and under the shade of nearby groves.

When the pullets are taken from the brooder house, cockerels are carefully inspected for individuals that give promise of developing into superior breeders. These are taken to a range apart from the pullets; the remaining ones are specially milk fattened and sold as broilers.

On the range the chicks are placed in flocks of one hundred to two hundred and fifty in each range house.

They are allowed to run in small temporary yards for a few days until they learn to go in and out of the house; after this they range at will over the fields.

When their combs begin to redden and develop, the pullets are taken to the Hendwels and placed in flocks of five hundred where they are fed for early and continuous egg production.

THE LAYERS.

All laying females, except the trap nested breeders, are housed in Hendwels. These houses are large, open, airy, light places, where the hens roost and lay. The exercise rooms are thirty feet square and have cement floors which are littered with wheat straw. These rooms afford an ideal place for the hens to collect and sing during the days that it is unpleasant for them to be out of doors. They roost and lay five hundred in a flock, and range in large pastures, or fields of several acres, in flocks of from two thousand to three thousand.

The ground food, water and shell are supplied automatically, and the grain is fed by hand. The attendants are all trained to think in terms of comfort for the hens, and are not required to wear themselves to a point of carelessness by having to carry large buckets of feed. Each Hendwel has its own feed bins, which are refilled as often as necessary by wagon, generally once a month. The attendant has to carry only an egg basket.

Weather conditions are such that there is scarcely a day throughout the year when the hens cannot be out of doors, thus insuring strong, fertile eggs. Although very nearly 30,000 eggs for hatching were selected from these large flock collections during Spring of 1911 not a single instance of low fertility or unsatisfactory hatching power was reported. By test the fertility averaged above 95%.

A FLOCK OF LAYERS RANGING FROM ONE OF THE HENDWELS IN JANUARY.

1200 YOUNG PULETTS ON THE RANGE.
The Cornell Countryman

THE TRAP NESTED BREEDERS.

For several weeks preceding the first of January the flocks in all the Hendwels are carefully observed for the selection of superior, vigorous females showing evidences of unusual laying power. These individuals are carefully handled and judged according to the American Standard of Perfection and only those most nearly approaching its requirements are used.

These are put into a trap nest house and trapped until it is made sure that they lay a large, uniformly shaped, dead-white egg. Any individual, however good, which does not produce a well shaped, large-sized, perfectly dead-white egg, is discarded as a breeder.

As fast as they prove they are worthy, by their performance in a trap nest house, they are divided into flocks of ten to twenty, mated with high scoring, vigorous males, and placed in small colony houses on an enclosed range. Eggs from these breeders are carefully recorded and the chicks hatched from them marked so that their ancestry can be traced.

This progeny goes into the general laying flock until it has shown its ability to withstand the strain of heavy laying, and then as before is re-selected for the breeding houses.

The greatest profit does not always mean the greatest number of eggs. It is known that very large individual yields can be obtained where the hens are kept in small flocks of ten to twenty-five hens each, but the ratio of labor costs to product receipts is so small that the plan is commercially prohibitive. By the 1000 unit method as above described, the flock production is far above what is generally considered to be a fair average and the man work of the plant is so specialized and divided that one man handles very easily all of the routine work necessary to care for 5000 individuals. The average flock production per hen year for the twelve months ending October 31st has been very close to 140 eggs. This average of course must undoubtedly contain some very high individual records though the performance of the flocks as a whole is remarkably uniform as shown by the daily production percentages.

A complete system of records of each day's work, showing feed used, eggs produced, hatches taken off, stock sold or moved comes into the manager's office at the end of the day. At the beginning of each day, instructions for that day are issued to the working superintendent who has charge of all outside work. Sometime during each day, the manager goes over the entire place taking careful notes of anything that might escape the notice of the attendants or the superintendent so that a double check is at all times kept on the work at hand.

This is another flock of layers and illustrates the extent of range to each unit of 1000 hens.

Records.

[Image of a flock of chickens]
THE FERTILITY AND HATCHING POWER OF 
HENS’ EGGS

By C. A. Rogers
Assistant Professor of Poultry Husbandry, Cornell University

Everyone naturally wishes to hatch from the best individuals in order to renew the flock with stock which is better, if possible, than the old. By the best individual one means the hen which will economically produce progeny that are better than the average of the flock.

How is this best individual chosen? She is not the individual producing the greatest number of eggs only, or possessing the best shape, etc. She is rather the one which possesses as complete a combination as possible, of all the valuable qualities of high egg production, correct shape, large, well-shaped eggs, etc. Among these desirable qualities are high fertility, and hatching-power of the egg. Other factors remaining the same, high fertility and hatching-power of the eggs means an economical production of day-old chicks.

The question which naturally arises is, “How do fertility and hatching-power of the eggs combine with other favorable qualities in this best hen?” One phase of this question only is dealt with in the following paragraphs, namely, a comparison of the production of the hen with the fertility and hatching-power of the eggs.

The data are taken from two pens of fowls at the New York State Experiment Station at Ithaca. These fowls are a part of certain experiments dealing with the inheritance of egg production and other characters. A total of eighty-two hens are included, representing two seasons of work. The tables include all the eggs that were incubated. They were produced during the spring season of the second year of production.

A comparison of the fertility and hatching-power with the number of eggs produced per hen during the first year of production is shown in Table I. There is a noticeable fluctuation in the fertility of the eggs, regardless of the number laid. If this variability indicates anything at all, it is that the fertility is influenced but slightly, if at all, by the number of eggs produced. On the other hand, the fluctuation in hatching-power shows the eggs from the average good producer to have a higher hatching-power than the eggs from either the poorest or best layers.

A similar comparison is shown in Table II. The division into classes in this table is based upon the production of the second year (the year of production in which the eggs used in these tables were hatched). It is expected that hens will lay fewer eggs during the second year, consequently the division into classes is based on twenty-five less. The results expressed in Table I are substantiated in this table. The high fertility of the lowest producers cannot be considered important since the eggs from only two individuals fall into that class. The best fertility and hatching-power of the eggs lies with the hens of average production (one hundred to one hundred and fifty eggs in the second year) rather than with the hens of extremely low or remarkably high egg production.

In Table III the combined production of the first and second years are used as a basis of classification. The results shown in Tables I and II are confirmed. It will be noticed in these tables that a slight difference exists in the number of hens falling into similar classes. This undoubtedly accounts for the slight variation in the percentage of fertility and hatching-power in the same classes in the three tables. But the combined production of the first and second years undoubtedly provides a more substantial basis of comparison. In this table also the hens of good average production show the greatest ability to produce eggs of good hatching-power. These hens of good production averaged
276 to 325 eggs in two years or approximately 151 to 175 eggs the first year, and 126 to 150 eggs the second year. The heaviest layers consistently show a lower fertility and hatching-power than their less productive sisters. This difference, however, is not very marked and can be explained partly by the fact that their systems are taxed too heavily. At the same time, it is interesting to note that the poorest layers as a rule, do not show as good hatching-power as the medium to heavy producers.

Table I—A Comparison of the Fertility and Hatching-Power with the Eggs Produced per Hen

<table>
<thead>
<tr>
<th>Eggs Laid First Year of Production</th>
<th>No. Hens</th>
<th>Eggs Incubated</th>
<th>Per Cent Fertile</th>
<th>Per Cent Chicks to Eggs Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or less</td>
<td>11</td>
<td>180</td>
<td>89.4</td>
<td>55.0</td>
</tr>
<tr>
<td>101-125</td>
<td>12</td>
<td>197</td>
<td>98.0</td>
<td>64.5</td>
</tr>
<tr>
<td>126-150</td>
<td>20</td>
<td>330</td>
<td>94.0</td>
<td>63.8</td>
</tr>
<tr>
<td>151-175</td>
<td>17</td>
<td>238</td>
<td>95.4</td>
<td>68.9</td>
</tr>
<tr>
<td>171-200</td>
<td>11</td>
<td>141</td>
<td>97.1</td>
<td>55.4</td>
</tr>
<tr>
<td>200 and over</td>
<td>11</td>
<td>189</td>
<td>89.0</td>
<td>53.4</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>82</strong></td>
<td><strong>1275</strong></td>
<td><strong>93.8</strong></td>
<td><strong>61.2</strong></td>
</tr>
</tbody>
</table>

Table II—A Comparison of the Fertility and Hatching-Power with the Eggs Produced per Hen

<table>
<thead>
<tr>
<th>Eggs Laid Second Year of Production</th>
<th>No. Hens</th>
<th>Eggs Incubated</th>
<th>Per Cent Fertile</th>
<th>Per Cent Chicks to Eggs Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 or less</td>
<td>2</td>
<td>25</td>
<td>100.</td>
<td>56.9</td>
</tr>
<tr>
<td>76-100</td>
<td>14</td>
<td>218</td>
<td>87.6</td>
<td>61.4</td>
</tr>
<tr>
<td>101-125</td>
<td>24</td>
<td>384</td>
<td>96.1</td>
<td>61.7</td>
</tr>
<tr>
<td>126-150</td>
<td>20</td>
<td>303</td>
<td>95.3</td>
<td>64.7</td>
</tr>
<tr>
<td>151-175 M</td>
<td>15</td>
<td>223</td>
<td>95.0</td>
<td>56.5</td>
</tr>
<tr>
<td>176 and over</td>
<td>7</td>
<td>122</td>
<td>90.2</td>
<td>59.8</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>82</strong></td>
<td><strong>1275</strong></td>
<td><strong>93.8</strong></td>
<td><strong>61.2</strong></td>
</tr>
</tbody>
</table>

Table III—A Comparison of the Fertility and Hatching-Power with the Eggs Produced per Hen

<table>
<thead>
<tr>
<th>Eggs Laid in Two Years of Production</th>
<th>No. Hens</th>
<th>Eggs Incubated</th>
<th>Per Cent Fertile</th>
<th>Per Cent Chicks to Eggs Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>175 or less</td>
<td>5</td>
<td>58</td>
<td>100.</td>
<td>69.0</td>
</tr>
<tr>
<td>176-225</td>
<td>11</td>
<td>194</td>
<td>90.8</td>
<td>56.7</td>
</tr>
<tr>
<td>226-275</td>
<td>27</td>
<td>427</td>
<td>94.0</td>
<td>63.2</td>
</tr>
<tr>
<td>276-325</td>
<td>19</td>
<td>291</td>
<td>95.5</td>
<td>66.0</td>
</tr>
<tr>
<td>326-375</td>
<td>16</td>
<td>241</td>
<td>95.4</td>
<td>58.6</td>
</tr>
<tr>
<td>376 and over</td>
<td>4</td>
<td>64</td>
<td>82.8</td>
<td>42.2</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>82</strong></td>
<td><strong>1275</strong></td>
<td><strong>93.8</strong></td>
<td><strong>61.2</strong></td>
</tr>
</tbody>
</table>

Table IV—A Comparison of the Fertility and Hatching-Power with the Rate of Production During the Period of Accumulating Eggs for Incubation

<table>
<thead>
<tr>
<th>Eggs Laid During Period of Accumulating for Incubation</th>
<th>No. Hens</th>
<th>Eggs Incubated</th>
<th>Per Cent Fertile</th>
<th>Per Cent Chicks to Eggs Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 or less</td>
<td>14</td>
<td>117</td>
<td>99.2</td>
<td>73.5</td>
</tr>
<tr>
<td>12 or 15</td>
<td>22</td>
<td>313</td>
<td>95.4</td>
<td>61.7</td>
</tr>
<tr>
<td>16 or 18</td>
<td>25</td>
<td>421</td>
<td>94.8</td>
<td>60.3</td>
</tr>
<tr>
<td>19 or more</td>
<td>21</td>
<td>424</td>
<td>90.1</td>
<td>55.8</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>82</strong></td>
<td><strong>1275</strong></td>
<td><strong>93.8</strong></td>
<td><strong>61.2</strong></td>
</tr>
</tbody>
</table>
The number of eggs laid during the period of incubation has some effect upon the fertility and hatching-power of the eggs also. It is natural to expect that since a hen has only a specific amount of vitality to put into her eggs that the amount given each egg will decrease in proportion to any increase in the number of eggs produced. This expectation is confirmed in the results shown in Table IV. This table is classified according to the number of eggs laid during the period of accumulating eggs for incubation. A gradual but consistent decrease in both fertility and hatching-power of the eggs occurs in proportion to the increase in production.

From the data at hand it would seem apparent therefore, that the production of eggs beyond a certain limit is obtained only at the expense of some fertility and hatching-power in the eggs. This limit fortunately is high. At the same time the poorer layer does not seem to possess the vitality and energy to compensate for her poor record of production with greater powers of reproduction.

It must be borne in mind however, that these records do not show individual variation. Such variation exists in all classes. It exists in the different hatches of the same fowl in the same season. For example, one individual which laid 448 eggs in two years gave no chicks from 10 eggs incubated in the first setting, but did produce 9 chicks from 9 eggs incubated in the second setting. Another individual laying 375 eggs in two years produced 14 chicks from 19 eggs in two hatches. Still another individual laying 348 eggs in two years produced no chicks, from 20 eggs incubated in two hatches. It is apparent therefore, that although the average moderately heavy layer produces eggs of greater hatching-power than the average extremely heavy producer, there are individuals in the heaviest producing class which do lay eggs of excellent hatching quality.

THE FIFTH ANNUAL FRUIT EXHIBIT

By J. J. Swift, '14

Among the many expressions of the efficiency of the work done by the students in the College of Agriculture the Annual Fruit Exhibit of the Department of Pomology occupies an important place. Due to the careful and painstaking work of the committees in charge under the capable supervision of Professor C. S. Wilson the Fifth Annual Fruit Exhibit held Nov. 1-4 eclipsed all former shows both in the quality and the amount of fruit. The exhibit was well attended at all times by students, and by fruit growers in the neighboring regions.

For several weeks before the exhibit, specimens of fruit were sent in from every fruit growing section of the country. Among the states represented were New York, Pennsylvania, Connecticut, Massachusetts, Virginia, West Virginia, Ohio, Colorado, Oregon, and Washington. The work of unpacking, grading, and managing this collection of fruit was done entirely by the students. No little credit is also due the decorating committee for the neat arrangement of the Cornell colors on the stairway and in the hall, and for the good taste in the exhibit decorations. For comparison the plates of fruit were arranged by states. In this comparison New York in no way suffered. The method of labeling, moreover, was particularly effective. Upon entering the room the observer was greeted—not by an array of massive cardboard, but by a veritable sea of red, green, and yellow. There were no less than 87 varieties of apples and 50 varieties of pears. Ellwanger & Barry and D. K. Bell of Rochester again furnished the greater part of exhibit of pears. The alternate arrangement of the boxes of baldwins and greenings and the mass effect of the yellow varieties from the orchard of the College were particularly
attractive. The Department of Entomology, also, had an instructive exhibit showing the insects infesting fruit trees.

The judging was done by a committee of students from the advanced class in pomology.

In several respects this Fruit Exhibit is significant. That such a varied and splendid exhibit of fruit from the orchard rented by the College could be the result of one year's careful cultivation seems almost incredible. The second year after cultivation was begun, this orchard of two acres, hitherto deemed practically worthless, produced 300 barrels of apples! We are led to wonder how many orchards there are in this country, the yield of which could be increased even a thousand percent by similar treatment. It is significant that the students of the college acquire at this exhibit a first hand knowledge of many varieties of fruits. Finally, there is no doubt that New York can grow varieties like the Baldwin and Greening better than any other state. On the other hand, it is

unwise for New York growers to compete with the growers of the west in raising Spitzenbergs. In other words, each grower must appreciate the necessity of growing intensely the varieties best adapted to his locality.

In concluding, we would recall the Wenatchee Valley of Washington with its thousands of acres of apple orchards. Here fruit growing is a science. The land is well prepared and

thoroughly irrigated. Cultivation is a slogan and skillful packing a necessity. One thousand dollars per acre is a small price for an orchard. And yet, the Wenatchee Valley farmers can grow only certain varieties. We of New York have every advantage—plenty of rainfall, a cooler climate, and good markets that are close at hand. Considering, therefore, the lesson of the Wenatchee Valley farmers, the manifold returns from proper care of orchards in the eastern states, and the earnest cooperation of the fruit growers, we do not hesitate to predict, in leaving behind the exhibit of 1911, an even more successful Fruit Exhibit for 1912.
HAVING become convinced that there were profits to be made in egg farming about four years ago we determined to try it out.

We were very fortunate in finding a small farm of about twelve acres with south-east slope and gravelly loam which made it well adapted to poultry raising. This is located within the corporation which we find to be a great advantage in marketing products as all express is called for and all feed is delivered from the mill.

We did not have possession until too late in the Spring to do our own incubating, so we bought 1000 S. C. White Leghorn day old chicks and used the Cornell gasoline heated brooders for them. The weather was extremely cold when they were shipped so that several hundred of them died from being chilled. However, we succeeded in raising over 300 fine pullets to put in our laying house in the fall. Our laying house consists of pens 20 ft. by 20 ft. which cost us about $125 each. The first fall we only built the number of pens that were needed for our flock and have since added to it as our flock has increased until this winter the flock numbers 1200 layers. One of the first problems that a woman on a poultry farm must consider is the labor question. One man can easily do the work with some extra help during the brooding season. We have planned to make the labor item as small as possible and in order to lessen the work, have put a trolley through the laying pens, have the water piped with a faucet over each drinking pan, use a gasoline engine for cutting bone and alfalfa and for shelling corn. We do our own incubating and have the principal charge of the baby chicks.

Feed bought in large quantities is cheaper so we buy our wheat for the year when it can be bought directly from the farmers and thus save the middleman's profit, and order meat scraps by the ton. We find that it costs us about $1.20 for feed, litter, etc., to keep a hen a year. Of course, this is for a White Leghorn hen, the heavier breeds would cost more.

We consider that the old hens which are sold in the fall pay for the growing of the pullets to replace them. This year we have grown over twelve hundred pullets. Of these we have over three hundred to sell at from $1.50 to $2.00 each. It costs us about fifty cents to grow a pullet which makes a very good profit for six months' work.

We select our hens especially for vigor and egg type and have very good egg production. Last year, after paying for labor, feed, litter, etc., from eggs alone our hens netted us about $2.25 each. This does not include any of the eggs used in our own incubators or in the house. Our market eggs were sold at wholesale prices through a commission man. We consider that the eggs and chickens used by the family and eggs for incubation would pay the interest on the investment, which is about $400 for land, tools, buildings and equipment for the poultry plants.

This, of course, does not include our dwelling house or land not used for the poultry. These figures are taken from the records which are accurately kept.

Eternal vigilance is the price of success in poultry. To grow chickens well, sanitary conditions must be the best possible. We use the double yarding system for the hens, which are housed in open front houses. The pullets are grown on free range in a corn field; one year in one field, and the next in another.

We feel gratified with the results of our venture and feel that much is due to the help we have received from the Poultry Department of Cornell University.
A RECORD-BREAKING HEN
By James E. Rice and Clarence A. Rogers

A PHENOMENAL hen is "Lady Cornell," (No. 3211), bred and owned by the Cornell Poultry Department. In her first year of laying this little Single Comb White Leghorn, weighing 3.21 pounds, produced 257 eggs averaging 1.83 ounces each and having a total weight of 29½ pounds, or 9.2 pounds of eggs for each pound of live weight. This is a remarkable performance from a physiological standpoint. It is the highest official experiment station record published in this country.

Dr. W. H. Jordan of the New York State Experiment Station at Geneva, has compared a Leghorn fowl that weighs three and one-half pounds and lays 200 eggs, weighing twenty-five pounds, with a Jersey cow that weighs 1,000 pounds and gives, in a year, 7,000 pounds of milk containing 14% of solids. He states that "if you take the dry matter of the hen and compare it with the dry matter in the eggs she lays in a year, there will be five and one-half times as much dry matter in the eggs as in her whole body. The

Food consumed, 110 pounds ........................................... $1.66
Labor ................................................................................. .75
Interest on investment ...................................................... .25
Value of eggs laid, 257 at $.35 per dozen ......................... $7.43
73 pounds manure ......................................................... .29

Net profit, not counting depreciation in value of hen .......... $2.66

Perhaps still more remarkable is the fact that after her first year's heavy production this hen has laid 189 eggs weighing 22 pounds and is still laying with 32 days before the close of her second year. This makes a total yield of 466 eggs in less than two years.

When we realize that flocks of good hens usually lay on an average about eleven dozens (132) eggs each and rarely exceed twelve dozens (144) eggs per hen, and that the average farm flock probably lays less than 100 eggs per hen per year, the unusual performance of "Lady Cornell" is emphasized.

Only twelve eggs behind "Lady Cornell" is "Madame Cornell" (No. 3352), who produced 245 eggs weighing 30.6 pounds in her first year of laying and has laid, thus far, in her second year, 136 eggs weighing 16.2 pounds, or a total of 375 eggs in 27 days less than two years.

In nearly the same class are others of the same age and variety. Fifteen of the highest producers, including "Lady Cornell" and "Madame Cornell," laid on an average 236 eggs each.
One flock of twelve pullets averaged 182 eggs each.

These high records are due to a combination of circumstances: (1) a good laying strain; (2) careful selection of breeders for constitutional vigor; (3) a suitable ration; (4) fresh air house conditions; (5) care and skill in feeding and management.

For the latter the Department is indebted to Mr. W. S. Lyon, Assistant in charge of the investigation pens.

The regular "Cornell ration" was fed as follows:

The following whole grain mixture is fed morning and afternoon in a straw litter:

<table>
<thead>
<tr>
<th>Winter</th>
<th>Winter</th>
<th>Summer</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 lbs. wheat</td>
<td>32 quarts wheat</td>
<td>60 lbs. wheat</td>
<td>32 quarts wheat</td>
</tr>
<tr>
<td>60 &quot; corn</td>
<td>36 &quot; corn</td>
<td>60 &quot; corn</td>
<td>36 &quot; corn</td>
</tr>
<tr>
<td>30 &quot; oats</td>
<td>30 &quot; oats</td>
<td>30 &quot; oats</td>
<td>30 &quot; oats</td>
</tr>
<tr>
<td>30 &quot; buckwheat</td>
<td>20 &quot; buckwheat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following mash is fed dry in a hopper kept open during the afternoon only:

<table>
<thead>
<tr>
<th>Winter and Summer</th>
<th>Winter and Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 lbs. corn meal</td>
<td>57 qts. corn meal</td>
</tr>
<tr>
<td>60 &quot; wheat middlings</td>
<td>71 &quot; wheat middlings</td>
</tr>
<tr>
<td>30 &quot; wheat bran</td>
<td>57 &quot; wheat bran</td>
</tr>
<tr>
<td>10 &quot; alfalfa meal</td>
<td>20 &quot; alfalfa meal</td>
</tr>
<tr>
<td>10 &quot; oil meal</td>
<td>8 &quot; oil meal</td>
</tr>
<tr>
<td>50 &quot; beef scrap</td>
<td>43 &quot; beef scrap</td>
</tr>
<tr>
<td>1 &quot; salt</td>
<td>½ &quot; salt</td>
</tr>
</tbody>
</table>

The fowls should eat about one-half as much mash by weight as whole grain. Regulate the proportion of grain and ground feed by giving a light feeding of grain in the morning and about all they will consume at the
afternoon feeding (in time to find grain before dark). In the case of pullets or fowls in heavy laying, restrict both night and morning feeding to induce heavy eating of dry mash, especially in the case of hens. This ration should be supplemented with beets, cabbage, sprouted oats, green clover or other succulent foods, unless running on grass covered range. Grit, cracked oyster shell, granulated bone and charcoal should be accessible at all times.

The record of the hen, “Lady Cornell,” furnishes an instructive though startling evidence of human triumph in handling the forces of nature. Witness the gradual evolution of the domestic fowl through centuries from several species of wild jungle fowl to be found even now in India and Ceylon. These primitive fowl, like partridges, lay less than two dozens of eggs per year. “Lady Cornell” serves to point out the way to higher and still higher production. She is simply one of the advance guards in the march of the great army of hens in their upward development of domestication,—hen civilization,—by the guiding hand of man.

Phenomenal performance in egg production, like performance in all animal production, serves to point out the possible rather than the probable yield. There is a sharp distinction between the two. Commercially we must reckon with the high average rather than with the exceptional individual.

A phenomenal individual among domesticated animals is to the breed what a genius is to the human race, an exception, but one to be prized and treasured as indicating the “high water mark” in the rising tide in the evolution of the species.

“Lady Cornell” is, literally and figuratively speaking, a “rara aves;” she is a hen genius.
WHAT ARE PROFITS?
By G. F. Warren
Professor of Farm Management at Cornell University

The word profits is persistently misused by agricultural colleges as well as by farmers. The inaccurate English is bad enough, but the misleading conclusions are much worse as they result in losses to farmers.

Nearly all bulletins on fertilizer tests call the value of the increased crop less the cost of the fertilizer "profit" or "net profit." But it usually costs $1 to $2 per ton to haul fertilizer from town; the application of the fertilizer costs something; the use of the money for the season is a very important item; the harvesting and storing of the increased crop costs something. To ignore all these items and call the difference between the value of the increased crop and the cash cost of the fertilizer "profit" is very misleading. We ought to call this difference "the value of the increase above the cost of the fertilizer" or use some other accurate statement.

The prices at which crops are figured are often much more than farmers can get. It seems to the writer that the average farm price for the state for a period of five years as given in the Yearbook of the Department of Agriculture is a good price to use. It is interesting to see the comparisons made by different departments. At the New York State Fair this year, one state institution showed charts that valued corn silage at $7.00 per ton. They were showing the profits from growing corn. Another institution was showing how rich you could get by feeding cows. They valued corn silage at $2.50 per ton. The agronomy department of one college values manure including the cost of spreading at 50 cents per ton. This shows a great profit from using it as a fertilizer. The dairy department in the same institution credits the cows with manure at $1.50 in the barn. Probably it would cost at least 50 cents more per ton to haul and spread it. This same dairy department charges cows with hay at what it costs to grow it, not at what the hay is worth. This ought to make any scrub cow pay, whenever there is a good hay crop.

The difference between the cost of feed and the value of the milk is commonly called profit in bulletins and farm papers, but the feed is usually only from one-half to two-thirds of the cost of keeping a cow. The man labor usually costs from $10 to $30 per cow per year. The use of buildings is usually worth $5 to $15 per cow. The horse labor, the use of equipment, the interest on the investment, the veterinary fees, the male service, and many other items must be considered if we wish to find the profit. Instead of misleading persons by using the word profit, why not say "value of milk above the cost of feed," or invent a new word. A long awkward expression is better than an untruth.

A very recent bulletin uses the word profit in discussing certain systems of farming and tells how many times more profit a farmer will make if he follows a certain system. But when the bulletin is examined, it is found that the only expenses counted are labor, interest and taxes. The farmer who followed the system that gave greatest receipts would not necessarily make any profit at all.

The public will be much better instructed when papers, speakers and bulletins use the word profit both accurately and honestly.
FORMER CORNELL POULTRY STUDENTS WHO ARE NOW CONNECTED WITH POULTRY DEPARTMENTS IN EDUCATIONAL INSTITUTIONS.

1—Earl W. Benjamin  
2—J. E. Dougherty  
3—David E. Elder  
4—J. G. Halpin  
5—L. M. Hurd  
6—P. S. Jacoby  
7—W. E. Kidd  
8—W. G. Krum  
9—Miss M. W. Lambert  
10—J. P. Landry  
11—D. J. Lane  
12—W. A. Lippincott  
13—J. W. Lyon  
14—T. J. Matthews  
15—Frank E. Mixa  
16—Miss Clara M. Nixon  
17—C. L. Opperman  
18—J. G. Phillips  
19—H. C. Pierce  
20—J. E. Shreiner  
21—L. H. Schwartz  
22—R. R. Slocum  
23—R. P. Trask  
24—K. A. Rogers
FORMER CORNELL POULTRY STUDENTS

By Clara Nixon and E. W. Benjamin.

Former Students who are now Connected with Poultry Departments in Educational Institutions, and Their Contributions to the Poultry Literature of Colleges or Experiment Stations

It has seemed fitting, that with a history of the development of the Poultry Department at Cornell University, there should appear a record of those persons who are engaged in college or Experiment Station work, in Poultry Husbandry. A list of bulletins and articles on Poultry subjects written by these persons and appearing in College and Experiment Station publications, may also be of interest to the Countryman readers. Just as important, but more difficult to classify would be a larger group of former students who are successfully engaged in commercial poultry enterprises.

A group picture of twenty-five former students now connected with Poultry Departments has been assembled and will be found on another page. The persons here mentioned have taken poultry work at the New York State College of Agriculture, either as regular or special students, or in the Winter Poultry Course. Following is an alphabetical arrangement, the present addresses, the official positions and literary contributions of each:

Jacoby, F. S., B.S.A., '10

Kidd, W. E., W.P.C., '09
Ass't in Poultry Husbandry, Purdue University, Lafayette, Ind.

Krum, W. G., W.P.C., '06
Sup't of Plant, Poultry Dept., Cornell University, Ithaca, N. Y. "Lessons on Pat-

Lambert, Miss M. W., W.P.C., '10
Teacher of Poultry Husbandry, Georgia Normal and Industrial School, Milledge-
ville, Ga.

Landry, J. P., W.P.C., '09
Poultry Manager and Lecturer Agricultural College, Truro, Nova Scotia.

Lane, D. J., W.P.C., '09

Lippincott, W. P. C., '08, B. S. A., Iowa, '11

Lyon, W. S., W.P.C., '06
Ass't in Investigation, Poultry Dept., Cornell University, Ithaca, N. Y.

Martin, Geo., W.P.C., '10
Ass't in Poultry Husbandry, Cornell University, Ithaca, N. Y.

Matthews, C. H., W.P.C., '09
Ass't Instructor and Poultryman, University of Minnesota, St. Paul, Minn.

Mixa, Frank E., W.P.C., '10
Ass't in Poultry Husbandry, Iowa Agri-
cultural College, Ames, Ia.

Nixon, Miss Clara M., W.P.C., '05, Spec. '07
Ass't in Poultry Husbandry, Cornell University, Ithaca, N. Y. New York (Cornell) Experiment Station Bulletins: "Four Methods of Feeding Pullets," (with J. E. Rice), Bul. 249; "The Molting of Fowls" (with J. E. Rice and C. A. Rogers), Bul. 258; "Seven Methods of Feeding Chickens," (with J. E. Rice), Bul. 282; "Feeding
Young Chicks," Cornell Reading Courses for the Farm, Vol. I, No. 8. Cornell Rural School Leaflets (Boys and Girls). Lessons on: (1) Hatching the Eggs; (2) Brooding and Care of Chickens; (3) Feeding the Chickens.

Opperman, C. L., W.P.C., '05


Pierce, H. C., B.S.A., '07

Rogers, C. A., M.S.A., '07

Schreiner, T. E., W.P.C., '07, Spec. '09
Sup't of Plant, Kansas Agricultural College, Manhattan, Kan.

Schwartz, L. H., B.S.A., '11
Instructor in Poultry Husbandry, University of Wisconsin, Madison, Wis.

Slocum, R. R., B.S.A., '06

Trask, R. P., W.P.C. '07
Asst in Poultry Husbandry, Cornell University, Ithaca, N. Y.

ANIMAL FOOD FOR CHICK REARING

By Clara Nixon

Assistant in Poultry Husbandry, Cornell University

That fowls are great meat-eaters must be apparent to the most casual observer. They are constantly on the alert to appropriate to their own consumption most forms of insect life within their reach. A hen with a brood of chicks is especially active in this direction, finding (if allowed to range) enough insects and earthworms to supply her brood with a good proportion of animal food. Chicks reared in brooders may need as much animal food as the hen-reared chicks, but they are not able to procure it by their own effort. That animal food of some sort should be supplied to artificially reared chicks is conceded by most poultry men; but the kind of animal food to be given, and the proportion of this material to total food, is an open question.

The most common sources of supply of animal food for chick-feeding are: meat scrap, eggs, skimmed milk, and granulated milk. A third-grade powdered milk has been fed in connection with a ration containing beef scrap, and with good success. Unfortunately this product is not now on the market.

Meat scrap is one of the most useful and convenient of the animal foods used for chicks, but must be absolutely
without taint or mustiness, if it is to be used for this purpose. It is rich in protein and (if it contains a good proportion of bone) in mineral matter, which are necessary for the building up of the muscles, bones and feathers of the chicks. Rhode Island Bul. No. 145 says that in experiments at that station, high-grade beef scrap proved to be one of the best protein concentrates, and was superior to animal meal in rations containing the same amount of protein. Beef scrap varies much in condition and composition, and only the best should be used for young chicks. Sifted beef scrap usually has a smaller percentage of ash, but the addition to the ration of some material, rich in the minerals needed, will remedy this defect.

Bone meal or cracked bone are largely used to correct the deficiency in available mineral matter which exists in most chick rations, even those containing a good per cent of beef scrap. Rhode Island Bul. No. 126 states that it has been demonstrated at that station that phosphorus and lime are as necessary as protein for chick rearing. N. Y. (Geneva) Bul. No. 242 advises the use of bone for supplying these materials, rather than bone ash or Florida rock.

Eggs are well liked, and are extensively used in “starting” the chicks, or during the first week or ten days after hatching. They are usually boiled hard and mixed (shells and all) with bread crumbs or rolled oats. Eggs are, however, expensive food, unless the infertiles from incubation are used.

Skimmed milk is one of the best and cheapest of the animal foods, and seems to induce a more rapid growth on the part of the chicks than would be expected from the amount of food materials it contains. It is claimed that in chick feeding the acid of the sour milk has a medicinal effect. It was shown by experiment at the Indiana Experiment Station that the addition of skim milk to the ration of growing chicks, increased the efficiency of the other foods consumed, and that the period of greatest growth of the chicks was also the period of greatest milk consumption. (Indiana Bul. No. 71 and 76). New York (Geneva) Bul. No. 39 says that skimmed milk can be as profitably fed to chickens as to swine.

Sour milk curd or “cottage cheese” is valuable, but should be carefully fed so that the chicks do not get too much of it at any one time.

Granulated milk or milk albumen has given good results in chick rearing, especially when fed in connection with a ration containing beef scrap; but does not seem to be quite equal for this purpose to the sour skimmed milk. Bul. No. 126 of the Rhode Island Experiment station states that although by the addition of ground bone, milk albumen may be made as efficient for chick feeding as animal meal, it may not be possible to induce the chicks to eat enough of the milk albumen ration to produce as rapid growth as on the animal meal ration.

How far milk and its products may be substituted for meat food, has not been proved by experiment. It has been shown, however, that a ration containing meat food may be improved in efficiency by the addition of sour skimmed milk. In an experiment conducted at the Cornell Station, a ration consisting of cracked grain, ground grain and beef scrap, with plenty of green food, was fed to a flock of 100 chicks just from the incubators. An exactly similar ration, to which sour skimmed milk had been added for moistening the mash, was given to a similar flock kept under the same conditions. The results were as follows:

<table>
<thead>
<tr>
<th>Without milk</th>
<th>With milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number chickens put into flocks</td>
<td>100</td>
</tr>
<tr>
<td>Number chickens left at 8 weeks old</td>
<td>89</td>
</tr>
<tr>
<td>Weight of flock at 8 wks. (lbs.)</td>
<td>56.10</td>
</tr>
<tr>
<td>Average weight of chicks (lbs.)</td>
<td>630</td>
</tr>
<tr>
<td>Total gain in 8 wks. (lbs.)</td>
<td>47.97</td>
</tr>
<tr>
<td>Pounds dry matter in food to 1 lb. gain in wt. of flocks</td>
<td>3.76</td>
</tr>
<tr>
<td>Pounds dry matter in food, 1 lb live wt. of flocks</td>
<td>3.21</td>
</tr>
</tbody>
</table>
It will be readily seen from these figures that the flock having the skimmed milk made considerably better gain in eight weeks, and that for each pound of gain, less food material was required than for the flock which did not have the milk. The chicks having the milk in their ration ate more food per chick than the comparison flock, but consumed less dry matter per pound live weight.

In order to test the efficiency of eggs as compared with meat scrap, two flocks of 100 chicks each were fed on similar rations, except that, for the first three or four weeks, practically all the animal food of the one flock was furnished by eggs and sour skimmed milk, while the second flock was given beef scrap and milk to furnish about the same amount of animal protein as was consumed by the comparison flock. At four weeks old, the flocks were still about equal in numbers, but the chicks which had the eggs weighed 26.40 lbs. per 100 chicks, while those having the beef scrap weighed 31.60 per 100 chicks. The growth induced by the egg ration was more expensive than given by the beef scrap ration.

After four weeks, these flocks were fed alike, but the chicks which had been given meat scrap from the start, continued larger to 12 weeks old than those which were started on the egg ration, and were always better in appearance and activity.

Further experiment would be necessary before any definite percentage of meat scrap to total food could be decided upon as the best proportion for chick feeding. The most generally approved proportion seems to be six to ten per cent during the first two weeks, a larger proportion of the meat being allowed as the chicks grow older. Good results are obtained by this method, if other conditions are favorable. It has been demonstrated, however, that chicks may eat a larger proportion of meat without injury, and make good growth on the ration. N. Y. (Geneva) Bul. Nos. 149 and 171 report experiments where a ration in which 37 per cent of the protein was derived from meat food, was fed to growing chicks, with much better results in health and growth than were obtained by a similar ration in which all the protein was of vegetable origin. In a test of seven different rations for chick feeding at the Cornell Station (unpublished data) the proportion of meat food to total food, where hopper-fed beef scrap was supplied in connection with a well-balanced ration, was from 13 to 16 per cent, for the first two weeks; decreasing as the chicks grew older. No ill effect due to the practice of hopper feeding beef scrap was seen at any time. Experiments at the Rhode Island Experiment Station also supported the practice of hopper-feeding beef scrap to young chicks, especially in connection with a highly carbonaceous ration (R. I. Bul. 145). Just the limit in meat food consumption has not been shown, but in the case of the experiment at the Cornell station, it was evidently well under 30 per cent of the total food. One flock, given an unsatisfactory ration, with hopper-fed beef scrap, ate over 30 per cent of total food in meat, and eighty-nine per cent of these chicks died before seven weeks old. Whether this was due entirely to the proportion of beef scrap or whether part of the trouble was caused by the lack of some necessary element in the food, was not proved.

In the chick-feeding experiment above mentioned, the chicks which for the first few weeks were given a limited amount of beef scrap in their food, weighed 63.9 lbs. per 100 chicks at eight weeks old, while those which from the beginning were given all the meat scrap they wished, weighed 70.5 lbs. per 100 chicks, at the same age; 10.9 per cent additional gain, for the greater proportion of meat.

Whether the more rapid early growth is a distinct advantage, where the chicks are to be kept for layers, remains to be proved.
THE STOCK JUDGING TEAM

By E. G. Misner, '13

AS HAS been the custom for the past three years, the College of Agriculture, this fall sent a team of three men to compete in the Students' Judging Contest, at the National Dairy Show held in the International Amphitheater at Chicago. All of the previous teams have been very successful. The first team representing Cornell secured fifth place; the second team came up to second and captured the Jersey cup, while last year's team was the champion team of the contest. Of the five trophies offered, these men brought four home to remain in possession of the college for one year. The team this year were less fortunate.

Competition for this year's team was keen and close. After a month of work the men selected were J. S. Clark, F. H. Clothier and E. G. Misner. The team arrived in Chicago, Thursday morning, October 26th. The contest was held the next day as follows: Thirty young men representing ten different institutions participated. Two rings from each breed, one of four bulls and one of four cows were judged. The breeds were Ayrshires, Holsteins, Jerseys and Guernseys. The thirty students were divided into four groups, each with an official in charge. Each student was given fifteen minutes to examine a ring and write his placings on a card, which bore only his group number and his designation number. He was then given fifteen minutes to write the reasons for his placings. The cattle in the ring were scored and placed by the three judges, G. T. Bell of Washington, Professor Haecke and J. L. Doyle, or Narbeth, Pa., who separately graded the papers of the contestants. A perfect score was 100 each for reasons and placings. For each animal out of place, fifteen points were deducted. At 8 o'clock, Saturday evening, the instructors and the men of the contest assembled to hear the report. This year every cup and scholarship went to colleges that had never before won anything.

Two Breeders' Associations each offer a scholarship amounting to $400 to the man scoring highest in the respective breeds, this to be used for post-graduate study. Both T. B. McNatt of Missouri, who won the Holstein scholarship, and Ivan McKillop of Nebraska, who won the Jersey, are taking their work at Cornell.

For the benefit of those who might wish to try out for the trip next year, it might be well to consider briefly what constitutes the training. An advanced class in stock judging meets Saturdays of the first week during the first semester, and in the second term on the same day from Easter till June. This is open to all who have had Course I in Animal Husbandry. As the college herd does not supply sufficient material for practice in both this and the elementary course, frequent excursions are made to herds near Ithaca, and to others of greater reputation which are within convenient distance.

The value of the training received in this course is inestimable. In the first place, the opportunity of close association with a man who is not only foremost in his profession, but who is so able and willing to lend valuable and exact information upon almost any subject, is inspiring. Secondly, the student becomes acquainted with some of the foremost breeders of improved dairy cattle, men, who are not only excellent judges, but who are practical and sound in their suggestions and criticisms. The privilege of studying some of the best individual cattle is also a profitable one. Then too, the training in powers of quick, accurate and sound observation and judgment and in concentration is extremely valuable. Therefore, if a student works and does not make the team, or if he makes the team and fails to win in the final clash, he can never regret the time spent in this course of Stock Judging.
The Cornell Countryman

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December, 1911

The Administrative Situation

A meeting of the Trustees' Committee of which Ex-president Andrew D. White is chairman, was held at the Cornell University Club in New York City on November 4th. Dr. White made the following statement of its proceedings: "It was in the nature of a preliminary talk. Every member was present, as was also Dean Bailey. A feeling prevailed that both the University and the Agricultural College had entirely outgrown their limitations in relation to agricultural instruction. Various plans were proposed, all tending to give a much larger measure of self-government to the College. After a general discussion a sketch was made of a plan embodying the main ideas brought out during the evening, each article being taken up and notes made for more careful study at a later meeting. There was nothing in the nature of a disagreement regarding fundamental matters. It was felt by all present that this beginning was fortunate, and that on the lines laid down a workable plan can be developed. There is a universal feeling that with such a plan Professor Bailey can be induced to remain at the head of the College to put into effect during the coming years the plan in all its details."

Ex-president White, in a recent conversation with the Editor of the Cornell Countryman, stated that there should be another meeting of the Trustees' Committee early in December, at which time he believed the recommendations of Dean Bailey would be shaped to the satisfaction of all concerned, and would then be ready to present to the full board of Trustees at their next meeting, to be held the first week in January. The express purpose of all the plans outlined is to give as large a share of self-government to the State College of Agriculture as is consistent with the charter of the University. He said also that there was every reason to believe that the recommendations of Dean Bailey would be passed without a hitch.

The Alumni will be much gratified at this indication of readjustments in administrative matters of the College of Agriculture, and will await with deep concern, and hopefulness the future work of the Trustees' Committee.

Winter Course Students

To the Winter-Course students who have returned for another course, and to those who have come here for the first time, The Cornell Countryman desires to express on the part of the students a most cordial and hearty welcome. We welcome you as an important and familiar part of the student body, and we hope you will
join us in becoming an active element of the student body.

A splendid opportunity is before you and we hope you will take the fullest advantage of it. You will, of course, have your clubs, your teams and your debates, but besides this you will have offered to you invitations to join the clubs of the college and especially to attend the Agricultural Assemblies. Further than this the State is giving you free tuition; the faculty are putting forth their best efforts to give you the most essential instruction in the allotted time; the students are endeavoring to make you acquainted with the faculty and students, and the whole college is putting forth its best efforts to secure for you the greatest possible benefits.

All these things devolve certain responsibilities on you, which as students of the college, you will be expected to shoulder. Your best efforts should be directed toward your work in order that you may gain broader knowledge and increased capabilities, which is the primary reason for your coming here. You should get the spirit of good fellowship from the associations which are opened to you through the activities of the College, and you should accept the buildings as they are given to you from the state, as yours in trust and prove that you are worthy of that trust.

Realize that you are now a Cornellian, that you are upholding the name of Cornell University which stands for scholarship, prowess and clean sportsmanship; and when you depart take with you the true college spirit which does not mean a yell, or a "Cornell" poster on your suitcase, but rather broader knowledge, good fellowship, and high ideals.

During the first year of the Poultry Department, Professor Rice was instrumental in organizing the Cornell Poultry Association. The founders of the club had several purposes in mind: first, they wished to hold meetings where those interested in poultry could discuss practical problems of poultry keeping, tell their own experiences, and listen to talks by successful poultrymen. Second, there was also the idea of bringing the members together informally to get better acquainted with the department and with each other and to enjoy a social time together. A third purpose was to spread scientific information relating to poultry among the poultry keepers of the state.

From time to time members have given out of town lectures in connection with the agricultural extension work. Each year an educational exhibit has been conducted by members during Farmers' Week, and several times a poultry show has been given at that time. As soon as the new poultry building is completed, the association is planning to give another show.

The Association has financed itself by the sale of books and other agricultural literature. Members of the Association are on hand during forenoons at the salesroom in the Dairy Department.

It is planned to have some well known poultrymen speak at meetings during the year and members will discuss various phases of the business. The meetings are held once a week on Thursday evening. Any member of the College of Agriculture is eligible to membership.
CAMPUS NOTES

CALENDAR

Dec. 18—Ag. Sophomore Class meeting.
Round-Up Club meeting.
Lazy Club meeting.
Dec. 19—Intercollege Basketball, Ag. vs. Vet.
Ag. Association meeting.
Dec. 20—Instruction ends in regular and special work.
Jan. 3—Instruction resumed.

* * *

The Annual Intercollege Cross Country Race held November 25th was won by the College of Agriculture. M. E. was second, Arts third, and C.E. fourth.

* * *

The second assembly was held on November 2d. In opening, Mr. Knapp referred to the monthly assemblies as "Dean Bailey's evening, and our opportunity." After well rendered piano and violin solos by Miss Nye and Master Gilbert, Dean Bailey urged a royal welcome for the Winter Course students and commented on the growth of the college. He then spoke in part as follows: "During the fifty years in which agricultural colleges have existed there have been many different ideas of what an agricultural education should be. The old idea was that a man should be made to do strenuous manual labor. The modern idea is that an agricultural college should give information. Our college now gives 300 courses. This is the right idea but the ideal of agricultural education has not been reached.

"The greatest fault today is that the voluntary center of interest is not in the classroom but is in outside activities. We cannot say that any man has the right kind of an education who has attained to just a certain amount of information. His education must be also a matter of sentiment and affection. The center of interest must be the Cornell Farm. We must keep in intimate relations with the soil. The solution of rural problems depends upon this. This close acquaintance with nature ought to be a man's background which will shape his whole life.

"We ought to participate more in agricultural nature study. Before a man takes up pomology, for instance, he should know the birds and trees of the orchard. We should study the cow as we do the woodchuck. Certain groups of students might keep track of different phases of farm activities. The Japanese have a day set apart when they observe apple blossoms. Our tendency is to pick them or press them in a book.

"We do not know what it is to enjoy a wind or a rain. We are not naturalists because we have not a nature background. Americans are immersed in politics and other things when their nature background is more important. The great epoch of agricultural education will come when we shall have more of the nature study spirit in our farm work."
A J. I. Case traction engine has been installed in the new Farm Mechanics building and a Case grain separator in a smaller building just north of the laboratory. A farm shop, with a gasoline engine, power grindstone, drill press, forge, etc., where the tools used on the farm can be repaired will be gradually developed. Besides this gas engines are connected with shafting to demonstrate the various forms and uses of power transmission. Altogether, the increase in floor space and the addition of new farm tools is a big improvement over the crowded condition in the old laboratory.

* * *

Dr. Webber spent two weeks in New York City, supervising an Educational Exhibit at the Land Exposition. He was assisted by R. J. Shepard, '10.

* * *

“The Improvement of the Timothy Crop,” was the title of an address given by Dr. H. J. Webber before the National Hay Buyers Association at Niagara Falls recently. It has been printed at a part of the eighteenth annual report of the Association.

* * *

The Department of Plant Breeding has begun the distribution of the seed of some of the valuable timothy varieties originated by Dr. Webber. A few trial plats are being planted at the State Schools of Agriculture at Morrisville, Canton and also at Elmira.

* * *

Dr. Gilbert has an extensive article in the forthcoming number of the American Breeder’s Magazine, entitled, “Suggestive Laboratory Exercises for a Course in Plant Breeding.”

The Annual Report of the American Breeder’s Association, soon to appear, will contain ten articles by members of the Plant Breeding Department.

* * *

Professor C. S. Wilson acted as judge of the single plates at the New England Fruit Show, held in Horticultural Hall, Boston, in the latter part of October. In December he will speak at the meeting of the Society of Horticultural Science to be held at Washington, on “The Teaching of Pomology.”

* * *

The Department of Pomology will hold an apple packing school at the winter meeting of the Western New York Horticultural Society held at Rochester in the latter part of January. Some of the students from the department will do the fruit judging at this meeting.

* * *

The second annual meeting of the American Farm Management Association was held at Columbus, Ohio, on November 14th and 15th. Professors Warren and Lyon both spoke at the meeting.

* * *

We are glad to report that Professor Craig has recovered from his illness and is able to take up his work again.

* * *

The Extension Department is planning to hold ten agricultural schools lasting a week in those sections of the state where the greatest interest is manifest. The teaching will be along the line of farming in general and farm management. Local granges are showing a keen interest in this new idea and the department has already received applications for such schools from twenty-three counties.

* * *

On November 15, Professor Beal of the Department of Horticulture spoke before the Florists Club of Utica on, “Experimental Work in Horticulture.”

* * *

The Chrysanthemum Show which was held during the week of the Fruit Show was a pronounced success. Many different varieties of chrysanthemums were exhibited.

* * *

On the evening of November 15th, the Sophomore class in Agriculture held its regular monthly meeting in the Auditorium. After a short musical program, Professor Wilson addressed the class on, “College Habits.”
At a meeting of the Lazy Club held November 20th, among other items of interest, was a talk by Dean Bailey, in which he referred to the facilities which he hopes in the future may be provided for the various organizations of the College. It appears probable that the College of Agriculture will gradually be built up, more or less solidly, from the present buildings out to the new barns. He deplored the tendency, as the plant grows larger, of the College becoming a great impersonal pile of buildings, which would have no intimate connection with the personal lives of the students.

In order that this may be prevented, he wishes that some means may be found to obtain separate small buildings for the exclusive use of the various clubs and organizations. These buildings to be small and unpretentious, and to be located at various points where they would harmonize with the architectural scheme, an especial point possibly being made of appropriate planting in connection with them.

The Dean said that he hoped that the Lazy Club and the Cornell Countryman might be among the first to have such buildings. While the funds necessary to the carrying out of the plan are not immediately available, the principal reason for delay is that the ultimate layout of the buildings and particularly the grading and drives etc., has not been perfected, but it is hoped that it may be in the near future.

The Lazy Club is, however, seriously considering the moving of its old building, now disused, to some point, possibly in the neighborhood of the filtration plant. With this as a nucleus, an addition might be built, which would make a suitable home for this, the oldest club in the Agricultural College.

* * *

At the winter meeting of the New York State Fruit Growers' Association held in Rochester the first week in January, there will be a speaking contest in which five students from the Cornell Department of Pomology will take part. A prize of $50 will be awarded for the best speech on some subject connected with fruit growing.

* * *

At a recent meeting of the Agriculture Mandolin Club, Buchanan Tyson was elected leader for the current year.

### BOOK REVIEWS

**Animal Competitors**, by Ernest T. Ingersoll, the Young Farmer's Practical Library Series. Published by Sturgis and Walton Company, 31-33 East 27th Street, New York City; 313 pages; 33 illustrations; price $0.75 net.

This book contains accounts and descriptions of all the economically important wild mammals of North America. Its object is to point out to the public how the millions of dollars lost caused annually by the rodents and their relatives, may be stopped and how some of the heretofore neglected mammals may be made of practical use to agriculture, thus changing the needlessly high balance on the loss side to one of profit.

**Plant Life on Land**, by F. O. Bower, Sc.D., F.R.S., Regius Professor of Botany in the University of Glasgow. Published by G. P. Putnam's Sons, 6 West 45th St., New York City; 172 pages; Twenty-seven illustrations. Price 40 cts. net.

This little book is one of the Cambridge Manuals of Science and literature, a series which deals with various aspects of thought, and with recent scientific discoveries. The book reviews, in condensed form, the outlook of modern botany. To the student and to the general reader interested in science the book is full of interest.
In contrast to the showing made by the Agriculture soccer team of last year, the record of the present season is not particularly encouraging. The 1910 team made a complete sweep, winning every game without being scored on, and setting a pace which the other agricultural teams maintained in such good form as to win the yearly series of intercollege athletics. Although handicapped by the loss of all but three of the previous year's players, the team has been the equal, in nearly every respect, of last year's championship aggregation.

From the first call, a few days after registration, practice was regular and thorough, and the team developed consistently up to the close of the season. The only weakness in the team was the lack of experienced men on the forward line. This was a serious handicap, and kept the team from scoring at critical times. The forwards were aggressive, and kept the ball in the opponent's territory during the greater part of the harder games.

The low standing of the team is due in large part to the fact that the team from Mechanical Engineering, made up almost entirely of experienced men, was met at the very beginning of the season, when our own team was in comparatively poor shape, because of taking on so much new material. The scores for the season show that the teams taking the first three places in the series were very evenly matched. This is emphasized by the fact that Civil Engineering, the winner, defeated Mechanical Engineering only after one tie game had been played. At the close of the season, the agricultural team was the equal of any of the others, though receiving but third place.
FORMER STUDENTS

(Former Students: You like to hear from your former college friends, do you not? They are just as interested in hearing from you. Will you send us a few lines so that we can let your friends know where you are and what you are doing?)

ROYAL GILKEY, B. S. A., '08
Recently appointed Instructor in Extension Teaching.

Royal Gilkey became interested in agriculture as a boy by working spare hours on a large market garden farm near Boston. On graduating from high school he was employed for a year as assistant to the superintendent. This directly resulted in a greater interest in farming and a desire for an agricultural education.

On graduating from the College of Agriculture, Mr. Gilkey was employed as assistant manager on a 500 acre farm in this state. The following January he accepted an opportunity to enter the New York State Department of Agriculture. Here he was directly connected with Farmers' Institute Bureau for three institute seasons. During this time executive work was supplemented by visits to farms, institutes, state schools of agriculture, meetings of state agricultural societies and conventions.

In the Spring of 1909, Mr. Gilkey was appointed clerk of the Dairy Products Department of the New York State Fair. He was reappointed to this office on the two following years. His duties have thus been divided between Farmers' Institutes in the winter and spring, and State Fair work in the summer and fall. Additional work has been assigned him such as arranging for the exhibit of the State Departments and Institutions at the 1910 and 1911 State Fairs and the general management of the Boys' Company at the 1911 State Fair.

On October 15, 1911, Mr. Gilkey resigned as technical assistant of the New York State Department of Agriculture to accept appointment as Instructor in Extension Teaching. He is assisting in the Public Speaking course in the Extension Department and supervising the Reading Course for the Farm and the Mailing Department of the College. He is among the administrative officers of the Extension Department.

'97, Grad.—Professor O. M. Morris, who took a year's graduate work in Horticulture is now at the head of the Department of Horticulture at the Washington State College.

Prof. L. B. Judson has been working during the winter with the Department of Agriculture on the transportation of fruits. Prof. Judson was assistant professor in Horticulture here from the fall of 1907 till last January. He is located in Brooklyn, address L. B. Judson, 457 Washington Ave., Brooklyn, N. Y.

'01, B.S.A.—A daughter, Carolyn Louise, was born on May 13, at Rio Piedras, Porto Rico, to Mr. and Mrs. D. L. Van Dine, (Carolyn B. Gaylord, '99.) Mr. Van Dine is Entomologist at the experiment station of the Sugar Producers' Association of Porto Rico.

'02, M. A.; '04, Ph.D.—Dr. Fred W. Foxworthy, lately of the Bureau of Science, Manila, is now with the
College of Agriculture and Forestry, Los Baños, Laguna Province, Luzon, P. I.

'02, B. S. A., '05, M. S. A.—G. W. Hosford, who is manager of the San Dimas Lemon Association, visited the College of Agriculture recently. This organization, which is one of the largest cooperative organizations handling lemons, employed Mr. Hosford in order to put in practice the results of the investigation by the Department of Agriculture regarding the better handling of citrus fruits. While here he spoke before the Lazy Club. His address is U. S. Dept. of Agriculture, Washington, D. C.

'03, B. S. A.—William J. Ward's address is Gold Beach, Oregon. He is forester of the Brooking's Lumber & Box Company of Highland, Cal., vice-president of the Gold Beach Lumber Company, general manager of the Southern Curry Telephone Company and vice-president of the Curry County Bank.

'05, M. S. A.—Professor W. S. Thornber recently resigned his position as head of the Department of Horticulture at the Washington State College to take a position as General Manager of the Lewiston Land and Water Co. This company has thirty-six hundred acres of fruit at Lewiston, Idaho.

'06, B. S. A.—Wilfred G. Brierly is now an Institute Worker for the Washington State College.

'07, B. S. A.—H. F. Prince is now manager of the Bailiwick Ranch, a large fruit farm at Grand Junction, Colorado. His address is Mr. H. F. Prince, Bailiwick Ranch, Grand Junction, Colo.

'07—'08, Grad.—E. J. Petry is at present an assistant in the Department of Agronomy at Purdue University. While here he was an Assistant in Botany.

'08, B. S. A.—Mr. A. W. McKay is employed by the United States Department of Agriculture, Washington, D. C., and has been working on the apple industry in California. He is now transferred to Florida, where he will work on the citrus fruits.

'08, B. S. A., '10, M. S. A.—M. C. Burritt has resigned as assistant agriculturalist in the office of Farm Management, United States Department of Agriculture at Washington, D. C., and has accepted the position of editor of the New York Tribune Farmer, at New York City. His residence address is 611 West 158th Street.

'09, B. S. A.—On October 25th, 1911 Walter W. Bonns was married to Miss Emily B. Cornish at Boston, Mass. Mr. and Mrs. Bonns are now at home at Orono, Maine.

'09, B. S. A.—S. P. Hollister, who has been working at Hampton Institute, Virginia, has recently accepted a position as instructor in horticulture at the Connecticut Agricultural College, Storrs, Conn.

'10, Ph. D.—J. P. Stewart, is professor of experimental horticulture at the Pennsylvania Agricultural College. Dr. Stewart has done some excellent work on orchard fertilization. His address is Prof. J. P. Stewart, State College, Pennsylvania.

'10, M. S. A.—H. B. Cowgill is at the experiment station of the Sugar Producers' Association of Porto Rico, Rio Piedras, P. R.

'10, B. S. A.—Cornelia F. Kephart is assistant entomologist at the New Hampshire Experiment Station, Durham, N. H.

'11, B. S. A.—Harlow C. Wheaton was visiting on the campus recently.

'11, B. S. A.—F. H. Perl was appointed city forester at Minneapolis, Minn., commencing work there on July 1st last. His work has included the making of plans and estimates for planting 5000 shade and ornamental trees. Some 74 men and 14 teams are employed in this work. Mr. Perl has also given several lectures before the civic clubs of the city.

'11, B. S. A.—James P. Terry is instructor in dairy husbandry in the University of Illinois. His address is 709 West Nevada Street, Urbana, Ill.
At the last meeting of Congress, Representative David J. Lewis from Maryland, introduced a bill proposing government management of the express business of the country. His reasons for this bill are: first, that the present express rates are exorbitant; and secondly, that express companies do not benefit the farmers and country merchants, who constitute nearly half of the population of the United States. His plan differs from parcels post schemes in that the latter limit the weight of packages to 11 pounds, thus tending to take business away from the country merchants. His plan, having no such weight limit would help country merchants, by bringing goods to their stores. Representative Lewis says that he has worked out a system of rates, by which, for example, a package weighing 5 pounds could be sent 106 miles for 11 cents, while for this same service, the present express rates are 25 cents or more.

* * *

According to a recent editorial in Wallace's Farmer the agricultural interests of this country are soon to be brought into serious competition with products of South America. The single country of Brazil is larger than the whole United States, except Alaska. One South American company backed by American capital, has a ranch in Brazil comprising five million acres, or about one-sixth the area of New York State. This ranch is expected to support five hundred thousand head of cattle and a like number of hogs. The company owns a railroad, steamship lines and will build three packing houses where the meat of the ranch will be packed.

* * *

The Congress of the American Association for Highway Improvement was held at Richmond, Virginia, beginning Nov. 20. In the official program of this big road congress there is a list of speakers, which includes many of the most brilliant men in the country. On the first day, National Day, the speakers included President Taft, Gov. Mann of Virginia, and other noted speakers. The third day of the congress was Road Users Day. This part of the program was under the auspices of the Touring Club of America and was devoted to a discussion of the various problems of traffic regulations. Moving pictures showing the effects of good and bad roads lent considerable interest. It was shown that the high cost of living has been due to a considerable extent to the difficulty of getting farm products to the railroads for shipment at the "bad roads" season.

* * *

At the thirty-first annual session of the Farmers National Congress held at Columbus, Ohio, Mr. Hayes, Assistant Secretary of Agriculture, suggested that the Congress reorganize into a national country-life federation. The organization proposed would be made up of delegates from state federations and farmers' associations, together with representatives of colleges and experiment stations. It would be a general clearing house for campaigns to improve rural conditions.

* * *

It is interesting to note the prosecutions which the United States Department of Agriculture is conducting for violations of the Pure Food Law. Several tomato canners have been called to account for unsanitary methods shown by the bacteria found in their products. In one brand the bacteria averaged 1,850,000,000 to the cubic centimeter. The Department is going after patent medicine men with a vengeance. Even where the label contains not a technical mis-statement but an implied one the offender is prosecuted. Dr. Wiley, the merciless foe of food and drug frauds, will have charge of this work in the future.
PROVE ALL THINGS

"Prove All Things—hold fast to that which is good." These words came from a man who reasoned. A man who would not take things as "a matter of fact" or consent to "let well enough alone." He reasoned first, last and all the time.

When Butter Makers, Cheese Makers or Dairymen reason and prove all things relating to the most sanitary, cleansing and purifying dairy cleaner they hold fast to

Wyandotte Dairyman's Cleaner and Cleanser

A scientific comparison of Wyandotte Dairyman's Cleaner and Cleanser with any other dairy cleaner on the market, both in composition and actual work done, explains why they favor Wyandotte Dairyman's Cleaner and Cleanser. Every ingredient possesses cleaning and cleansing properties and the results make for a cleaner dairy and higher grade products.

It is actual tests based on reason that has led State Agricultural Colleges, Dairy Commissioners and Inspectors to heartily recommend no other but Wyandotte Dairyman's Cleaner and Cleanser.

Write your supply man for a barrel or ask your dealer for a small sack.

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Wyandotte, Mich., U. S. A.

This Cleaner has been awarded the highest prize wherever exhibited.

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plant, washing machine—any farm machine to which power can be
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The record of IHC engines on thousands of farms is proof posi-
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economy, efficiency, and durability are well known.

IHC Gasoline Engines
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by skilled workmen, in the finest equipped
engine factories in America.
When you buy an IHC you know it
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P.; sawing, pumping, spraying, and grinding
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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.

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<tr>
<th>Number</th>
<th>Capacity</th>
<th>Weight</th>
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<tr>
<td>25D Steel Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
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<tr>
<td>26D Chilled Mouldboard</td>
<td>7 x 14</td>
<td>110 lbs.</td>
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<tr>
<td>25D-16 Steel Mouldboard</td>
<td>8 x 16</td>
<td>115 lbs.</td>
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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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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. of IRON and 3 to 6 per cent. of MANGANESE. All buyers should insist on having GENUINE THOMAS PHOSPHATE POWDER (Basic Slag Phosphate).

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Men who Wear the Quality Shop Clothes
Appreciate the Best in Tailoring.

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For Everything
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We will do the rest
NORWOOD & HULL, Props.

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Supplies for Agricultural Students
— a Specialty —

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That SWEATERS, PENNANTS, PILLOW COVERS, Etc. cleaned by the
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HAVE THAT NEW LOOK

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Self-Contained Engine

Powerful
Durable
Economical

FOR STATIONARY, SEMI-PORTABLE AND PORTABLE USE.

WITH

AUTOMATIC DRAINING WATER TANK

Impossible to overheat.
Minimum amount water required.

JACOBSON MACHINE MFG. CO.

Write for Bulletin 32.

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We bind anything.
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WE DO YOUR MENDING FREE
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Have your old shoes made like new.
Best oak sole and heels, sewed...
$1
Work Guaranteed

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Capital, Surplus and Profits $350,000.00
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Hats, Gloves, Shirts, Sweaters, Hosiery, Underwear, Slickers
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Make the Student Supply Store your headquarters
while in Ithaca. We carry a full line of supplies
which you need. Prices always right, and remem-
ber we give 5% for cash.

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UP-TO-DATE STYLES AND WORK
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For the past four years the great state of Pennsylvania has made a special appropriation of from $30,000 to $40,000 annually to teach the fruit grower how to use Lime-Sulfur washes, and incidentally to warn them against the use of "Scalecide," in spite of which the demand for "Scalecide" has increased from year to year and apples from trees sprayed with "Scalecide" for five years took all the first prizes at the Pennsylvania Horticultural Society meeting in 1910; three silver cups, the Adams County sweepstakes and 20 first prizes at the meeting of the same society in 1911. Which pays best? Prize apples or cider apples? "Scalecide" has no substitute. A postal request to Dept. A will bring you by return mail, free, our book, "Modern Methods of Harvesting, Grading and Packing Apples," and new booklet, "SCALECIDE, the Tree-Saver." If your dealer cannot supply you with "SCALECIDE" we will deliver it to any R. R. Station in the United States east of the Mississippi and north of the Ohio Rivers on receipt of the price: 50-gal. bbls., $25.00; 30-gal. bbls., $16.00; 10-gal. cans, $0.75; 5-gal. cans, $3.75. Address, B. G. PRATT COMPANY, 50 Church Street, New York City.

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RETAILING, WHOLESALING AND
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Pure cultures of Bacillus bulgaricus and Bacillus lactis acid., also a special mixed culture for preparing at home as well as in creameries and other institutions the Bulgarian type of fermented milk now so much in demand owing to its exceptional medicinal and nutritive qualities.

Full particulars accompany the Culture for preparing Starter and manipulating the milk or cream for making butter, cheese or commercial buttermilk.

Used and recommended by some of the best dairy experts in the country.

Price, 50 cents for two-ounce bottle, postpaid. Write for circular.

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Milk-Ferments Co.

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EVERYTHING FOR YOUR DAIRY

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.

WRITE FOR THIS FREE BOOK

It will show you the latest models in butter churns and workers, milk testers and testing supplies, tinware, stable fittings and supplies, engines, boilers, silos and everything in use on the modern dairy farm at the lowest prices.

UP-TO-DATE EQUIPMENT ADDS TO DAIRY PROFITS

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.

We manufacture equipment for every kind or size of dairy plant and equip more modern plants than all other concerns combined.

The catalog is free to everyone who asks for it. In writing, please state what machines or line of dairying you are most interested in. Address

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NO MAN is entitled to a greater degree of comfort in his work than is the farmer. It is to the farmer that we must look more than to any other industrial factor for the necessities of life. If there should be a universal destruction or failure in crops it would put the entire world on starvation rations.

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

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

OLIVER CHILLED PLOW WORKS
General Offices at SOUTH BEND, INDIANA.
Works at South Bend, Indiana, and Hamilton, Ont., Canada.

LIVE STOCK SALE
FRIDAY, FEB. 23, 1912, Farmers' Week

The Department of Animal Husbandry will offer its surplus live stock at PUBLIC SALE. The offering will consist of a fine lot of Cheshire swine, pigs, boars and bred sows, and Holstein and Jersey bull calves. Catalogues ready Feb. 1. Address, H. H. WING

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.
no rain in October and the wheat is small and does not look like it would stand the winter well.

We finished husking yesterday. From the acre where we tried your theory about bone-meal and clover making the Potash available, we harvested 50 bushels of rather chaffy corn, and from the rest of the field, where we used bone, clover and 50 lbs. Muriate of Potash per acre, we husked 70 bushels per acre of tip-top corn that is nearly all fit to sell on the ear for seed corn.

I figure that a ton of Muriate of Potash on 40 acres of corn will pay for a year's post graduate study for you and leave you a little spare change to chip in for athletics.

Mother and the girls are going to make a few days' visit to Aunt Sarah's

“Plant Food” is the title of a carefully compiled, comprehensive and scientifically accurate compendium of crop feeding, fertilizer mixing and conservation of soil fertility. Sent without charge upon application.

GERMAN KALI WORKS, Inc.
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GOULDS RELIABLE 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
The United States Cream Separator for 1912

Embodies Four Separator Requisites to a Degree Unequaled by any other Cream Separator

Close Skimming: The U. S. holds the World's skimming record — an ironclad fact.

Easy Running: The U. S. is now the easiest running Separator on the market.

Easy Washing: Our new patented skimming device is washed and made perfectly sanitary in less time than any other manufactured.

Durability: The same sterling workmanship which has made the U. S. famous for long life with fewest repairs.

The United States Cream Separator for 1912 is sold at the lowest price at which an efficient Separator can be sold — and this is the only basis of true economy.

Send for Catalog — or get quickest action by asking us for name of local agent nearest you, who will demonstrate right on your own dairy floor. Do it today!

Vermont Farm Machine Co.
Bellows Falls, Vermont
DE LAVAL Cream and Butter Triumph as Usual At National Dairy Show

Cream and butter produced through the use of DE LAVAL CREAM SEPARATORS made the usual clean sweep of all Highest Awards at the great National Dairy Show (including the annual convention of the National Buttermakers Association) held in Chicago October 26th–November 4th, just as has always been the case since the organization of the Association in 1892.

WHOLE MILK CREAMERY BUTTER

The sweepstakes or highest award in this class was won by A. J. Anderssn, Otisco, Minn., with a score of 97.50.

The second highest exhibit, winning the silver service set prize, was made by J. L. Wahlstrom, Stark, Minn., with a score of 96.83.

FARM SEPARATOR BUTTER

The sweepstakes in the gathered cream factory-made butter class was won by R. O. Brye, of the Readstown Creamery Co., Readstown, Wis., with a score of 97.33, this prize-winning butter being made from the cream of farm patrons using De Laval separators exclusively.

The highest scoring dairy or home-made butter exhibit was that of Mrs. Frank Grant, Tonica, Ill., who also recently won first prize at the Illinois State Fair at Springfield.

PRIZE CREAM EXHIBITS

The highest award for certified cream was made to Nichols Bros., Bloomfield, Ky., with a score of 98.80.

The highest award for market cream was made to O. J. Bailey, Tacoma, Ohio, with a score of 96.

ALL DE LAVAL SEPARATOR MADE

Each and every one of these highest scoring butter and cream exhibits was the product of a DE LAVAL CREAM SEPARATOR, and this wonderful prize-winning record, year after year, for twenty years, is overwhelming and unanswerable proof of DE LAVAL “ALPHA-DISC” superiority to any gravity creaming system or other centrifugal separator.

THE DE LAVAL SEPARATOR CO.

NEW YORK CHICAGO SAN FRANCISCO SEATTLE

PRESS OF W. F. HUMPHREY, GENEVA, N. Y.
Nature's Source of Phosphorus

GROUND PHOSPHATE ROCK

The most economical and only permanent soil builder. An application of 1,000 to 2,000 lbs. per acre will furnish an abundant supply of Phosphorus for five or ten years.

ROADCAST over clover and other legumes, or on stubble fields—at any time during the year—and when ready to do so plow in.

Mix it with all the animal manure—preferably making the mixture throughout the year as the manure accumulates by sprinkling in stables and feeding lots and over manure heaps, or pits, daily.

Too much cannot be applied, and the longer it lays the better, as all remains in the soil and only becomes available gradually as the acids of decaying organic matter act on it. There is no danger of its being dissolved and carried off in the drainage. Only a wash which carries the soil will remove it.

Contains more phosphorus than bone meal and only costs about one-third as much.

We have one of the most complete and "up-to-date" drying and grinding plants in the Mt. Pleasant District, and can make shipments immediately on receipt of orders.

We invite a comparison of our guarantees and terms with those made by our competitors.

We are always ready to correct and make good our mistakes and will use every endeavor to give satisfaction.

JOHN RUHM, JR.
MT. PLEASANT, TENNESSEE

Ground Rock Branch of Ruhm Phosphate Mining Co.
MINERS AND SHIPPERS OF Tennessee Phosphate Rock

In writing to advertisers please mention THE CORNELL COUNTRYMAN
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,
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,
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Announcement of the Graduate School,
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THE SHEEP PASTURE. (See Article Page 102).
THE DIFFICULTY OF CHANGING AGRICULTURAL PRACTICE

By Prof. W. J. Spillman

A SHORT time ago, in re-reading von der Goltz’ excellent treatise on Farm Management from the standpoint of German agriculture, I came upon a passage which penetrated so deeply into the heart of certain problems connected with agricultural development that I undertook to translate the passage into English. This started a train of thought connected with conditions in the United States, and finally lead to the subject which for some time has been uppermost in my mind.

The first paragraph in that which follows is a very free translation of the passage referred to. The remainder represents thoughts that came to me as I wrote.

Agriculture differs from all other industries in that the chief means of agricultural production, namely, the soil, is practically unchangeable both as to quantity and as to location. Unlike the means of production in other industries, and even the remaining factors of production in agriculture, it is not entirely consumed by use, nor does it decay with time. These facts have far reaching consequences for agriculture and for those engaged in it. They give to agricultural undertakings a certain inflexibility, but also stability. It is not accidental, but grounded in the nature of things, that great changes in material as in intellectual affairs go forward in rural communities much less rapidly than in the domain of other industries and callings. It would be unsafe for the farmer to bring about in his affairs those changes which go forward in the business and social life of the people, so rapidly and so freely as may well be the case with other classes. Owing to the dependence of agriculture on the soil, the farmer must often continue a system of management, even when for the time being it appears that some other system, if once installed, might be more advantageous; in other industries such changes are more easily brought about. But this disadvantage is counterbalanced by the greater stability which in general characterizes agriculture and the farming classes.

At the same time, the farmer must be able to modify his methods, and even his type of farming, when it is clearly apparent that such changes are necessary to meet changed conditions. Yet it would be a mistake to assume that he can do this as easily, or that he should do so on as slight a pretext, as the manufacturer or the merchant can or should make changes in his business. Not only does the immutable character of the soil give stability and inflexibility to agriculture, but the smaller use of credit in this industry renders it less subject to the dangers to which other industries are exposed, especially in times of general financial
stringency. The farmer, therefore, can afford to be somewhat tardy in following the trend of industrial affairs.

There come times, however, in a country such as ours, in which industrial development is still going forward at a rapid rate, when types of farming or systems of management which may have been ideal for the conditions under which they developed, became unsuited to existing conditions, and agricultural depression ensues, which can be remedied only by more or less radical and extensive changes in types of farming or at least in methods. Some of the factors requiring such changes may be enumerated.

The gradual decrease in rural population which is taking place in all of the older communities calls for more extensive use of machinery than formerly. Farmers in the East know comparatively little of four-horse machinery, while in the South, one-horse implements are much more common even than two-horse. In the West the case is different. Four-horse plows, harrows, and drills, and two row-cultivators, are common. On the Pacific Coast one sometimes sees harvesters drawn by 30 horses, or more. These machines, of course, cut and thresh the grain at one operation, a practice not feasible in the East, where grain will not stand till it is dry enough to thresh. The hilly topography of the eastern states is frequently urged as a reason why these larger implements are not adapted to that section. This is undoubtedly true in many instances. But there are many farms in New York, and even in New England, where the use of the largest machinery is practicable. Of course, it will not pay to invest in these large machines unless the farm is large enough to utilize their full possibilities. It is not wise economy to invest in, say, a four-horse plow unless the farm is really a four-horse farm. What size of farm is most economical is a question yet to be determined. A general farm devoted to the ordinary field crops, should certainly be large enough to give at least two men all they can do, since many operations require this number for their economical performance. What this area should be depends on the nature of the crops grown, and on whether these crops call for labor at the same or at different times. So far as the field work on crops is concerned, one man, with four-horse machinery throughout, in the latitude of northern Virginia, can do all the work required by 80 acres of corn, 80 acres of wheat, and 80 acres of timothy and clover hay except at harvest time, and at corn cutting and husking time. Under average conditions the total extra labor he would require in harvesting his crops would be less than 170 days, and he would not need to hire any extra horse labor. Two men, with six horses, could probably run such a farm, and keep livestock enough to consume all the roughage produced and part of the corn and hay. Further north, where the season is shorter, the area would necessarily be smaller.

In many sections of the country farming is still of an exploitive type. Such a system is defensible in newly settled regions with rich virgin soil. Such soils may usually be farmed very satisfactorily for one or two generations without attention to their fertility. But there comes a time when change of system is imperative. The South is now just emerging from a cotton debauch which lasted a century. The Plains States are introducing alfalfa, none too soon. The hill-tops of northern Pennsylvania and southern New York support a population of poorly fed and poorly clothed people. Changes are imperative there if, indeed, much of the land should not revert to forest.

Again, the marvellous increase of urban population, especially in the larger cities of the East, has changed the demand for numerous agricultural products to such an extent as to justify radical changes in types of farming. Market milk is now a commodity for which the demand in large sections
of the country is practically unlimited, and at prices more advantageous than those obtainable from factories or from farm-made dairy products. Hay sells at prices that make its production a very attractive business for the northeastern states. We now know, what was not known a generation ago, that commercial fertilizers will maintain the yield of humus producing crops like the grasses and clovers. I expect to see the growing of market hay more of an industry than it now is in New York and New England. Yet it would be unfortunate if farmers generally began to sell off their herds and engage in growing hay to sell. A small proportion of them may do this, but not all, or any very large percentage of them.

These are some of the more important factors calling for changes in types of farming. But the farmer who undertakes radical changes of this nature must proceed with great caution. Such a change is more or less a leap in the dark for most men. The more extended his knowledge, and the wider his acquaintance with the experience of others, the safer it is to change his system. It is here that the man with a good agricultural education has the advantage. He knows more about the various types of farming, and is more able to adopt the type which is best suited to the environment.

Very few farms are so conducted as to give profitable employment to the farmer and his family and his hired labor at all seasons of the year. The demands for labor at different seasons varies widely. It is possible to avoid this. It is possible to grow a selection of crops that will give an even distribution of labor at all times during the growing season. It is here again that the college man has a distinct advantage. He has a wider acquaintance with crops, and can select with more certainty, and with less effort, those crops needed to fill the gaps in any system. Prof. Warren’s Farm Survey work has shown that, on the average, those farms having a large variety of products for sale are more profitable than those having few classes of market products. I suspect that this is mainly because on these farms the farmer’s time is more completely occupied in profitable work. While in some sections there must be more or less radical changes in types of farming to relieve present agricultural depression, taking the country as a whole the principal thing needed is to fill in the gaps that exist in prevailing systems that the farmer and his help may find profitable employment at all times. I find that this is not difficult to do in any given case when data is available as to the dates when the various operations in the management of a crop occur, and the amount of labor required by each. I am coming to believe that data on the dates when operations occur, the amount of labor each requires, the character of “crew” required to perform each most economically, and the proportion of days available at different seasons for field work, is to become the foundation stone in scientific management to farming. This is the kind of information necessary in order to plan the organization of the work of a farm for greater economy in production and for the highest efficiency of effort expended. Trying to lay plans without this knowledge is like trying to draw specifications for a building without knowing the dimensions or the cost of the material to be used. With accurate data of the kinds enumerated above, it is possible to plan a farm so as to give profitable employment every day during the crop season, and to utilize horse power to its full capacity at nearly all times. The winter season may be included in such plans when we get the necessary data relating to winter work.

I believe we are on the threshold of tremendous progress in agricultural development. And this development will come as the result of investigations made directly for the purpose of enabling experts in farm organization to plan farm work in the light of the principles of scientific management. These investigations will give us a real science of Farm Management.
THE PRODUCTION OF HOTHOUSE LAMBS

By W. C. Buell
Holcomb, N. Y.

THERE is little doubt but that the sheep was the first animal to be domesticated and from the time of Abraham and Jacob, Moses and David, the keeping of sheep has been among the most profitable and uplifting occupations of man. If you live here in Western New York and call to your mind the more prosperous farms of your vicinity, I think you will find that very few have not at one time or another supported paying flocks of sheep. While I would not hold that no farm has dropped out the flock without its appearance reflecting the loss, I will say that I challenge anyone to show me a farm where a good sized flock of good sheep has been kept down through the years, that does not prove a beneficial influence by the farm's general air of prosperity.

If we are to keep up the fertility of our farms, we must make the keeping of stock a large part of our activity and for our section at least, I believe that sheep raising is the most practical form which this activity can take. In Ontario County, we do not, as a rule, take kindly to dairying, for where fruit and vegetable crops are largely grown, farmers do not like to give up the time, during the growing season, that a dairy would demand. Then too, if proper coarse fodders are provided, I believe that the amount of grain necessary to produce a given income, is much less in the sheep than in the dairy barn. Where alfalfa hay forms a large part of the flock's ration, grain need only be fed to the ewes while they are nursing their lambs, about ten weeks on the average where hothouse lambs are raised or from four to six weeks when the lambs come in the spring. But the dairy cow must have her grain for at least six or eight months.

There are few branches of farm industry about which hangs a greater misconception than about the raising of hothouse lambs. The very name suggests steam pipes and hot water bags. The actual temperature required, however, need not be as high as that in the dairy barn. It is more important that the quarters be light and airy than that they be more than reasonably warm. In our own practice we like to keep the temperature above freezing in the coldest weather, but we have raised good lambs in a barn where this could not be done.

A more important factor, the most important of all, is the ewe. Experience seems to show that in order to have our lambs born early, our ewes must contain a large percentage of either Dorset or Merino blood; or better of both, for a cross between the two breeds usually gives most of the good points of each and is, I think, the most practical ewe for the business. Of late years, however, we have been buying Western grade Ramboullet ewes to help keep up our numbers, as we find they give us about as large a proportion of fall lambs as any class of ewes we have, pure bred Dorsets not excepted.

It takes time to induce in a ewe the habit of producing her lamb in the fall and this is what so many lose sight of when going into the business. Even with ewes of the right breeding, one's experience the first two or three years is likely to be disappointing. But when a ewe does lamb in the fall, her succeeding lambs are quite certain to be early.

Our first lambs begin to come in October while the ewes are out in the pasture but late in the month when the weather becomes uncertain, all the ewes with young lambs, as well as those with any immediate prospect of becoming mothers, are put into winter quarters. This is the safest plan even if the pastures are in good condition. The little fellows can then be under your eye and the weak ones
helped on their feet. But really, this is much less trouble with fall lambs than with spring ones. The flock is then on pasture or fresh from it where the conditions as to exercise and succulence are much more favorable than in the ordinary sheep barn during the winter months.

Our nursing ewes get what silage they will clean up in the morning, say three pounds apiece more or less, and a heavy feeding of alfalfa hay at night. At noon they get about one pound of corn and oats, mostly oats. The corn is fed unhusked as the sheep can husk and shell it cheaper than we can and seem to enjoy the process.

When oats are high, cull beans may be allowed to take the place of them.

By the time the lambs are three weeks old they want to begin to forage for themselves so we provide pens with openings into the ewe's quarters through which the lambs can pass but the ewes can not. These pens or cribs should be roomy with a rack for alfalfa and troughs for grain contrived so that the lambs can not stand in them. We feed the lambs whole corn and wheat, each fed separately, as they will eat more if the grains are not mixed. We have tried various fancy side dishes as oil meal, cracked corn, wheat bran, brown sugar, etc., but have come to believe that the plain corn and wheat make the best grains. It is very essential if you want your lambs to eat well, that you should always sweep the trough out thoroughly before putting in fresh grain. If you should feed more grain than the lambs will eat in twelve hours, sweep it out and put in fresh. These sweepings need not be wasted as older sheep will eat them but you might better waste them than attempt to make the lambs eat them. For this reason we do not like a self-feeder as there is always more or less stale grain before the lambs.

We have shipped lambs at six weeks of age and even younger but the bulk of them are from eight to ten weeks old before they are fit to dress. Some are even older than this. These last are lambs which for some reason or another are getting insufficient milk and are fatted on corn rather than on milk but this does not seem to make much difference with their selling qualities. To bring top price a lamb should be fat and dress from thirty to thirty-five pounds which means from forty to forty-two pounds live weight depending on quality. These lambs are dressed at home, wrapped in tough paper and burlap, shipped by express to a commission house in New York, and sold to clubs, hotels, and steamship lines rather than to the butchers' trade.

The average man not in the business, figures every lamb at ten dollars a head. He will ask you how many
ewes you are keeping, add one third for twins, multiply by ten and prove that the business is better than a gold mine. He forgets that the market always sags off at least four dollars per head about March first, and that it is a lucky lamb man who gets one-half of his lambs off by that time. Once in a while he may do better than that but more often not as well. If we could succeed in having the lambs all born before December fifteenth the business would be comparatively certain; in practice, however, they are coming more or less every week from October fifteenth to May first. In looking over our records for the last five years, we find that about forty-five per cent of our lambs have been shipped before March first and netted an average of $10.11 per head. The remaining fifty-five per cent were sold after that date and brought an average net price of $6.21.

While the income per ewe kept, is from year to year, not so much greater than in the best managed flocks where the lambs are dropped in the spring and sold during the next winter, yet the number of ewes which may be kept with an equal amount of forage, pasture, and barn room is 50 percent more. The greatest foe of the sheep industry, greater than the wandering dog or the tariff is the internal parasite, and the freedom of lambs from these enemies while kept in the barn, is one of the strongest arguments in favor of the hothouse lamb business. Of all the branches of sheep raising, I think the growing of so called "hothouse lambs" offers the greatest opportunity for profit to the man who is willing to give his flock the necessary care and attention.

MODERN INCUBATION
By W. B. Candee

PROGRESS in the poultry industry is typified in the "mammoth" incubator. Artificial incubation was first attempted in order to hatch on a larger scale than was possible with hens. Then the small machines served the purpose. As poultry became a recognized business, the demand grew for greater hatching facilities and the "mammoth" machine was developed. Today size and capacity are unlimited and standard equipment can readily be obtained for any production desired.

The "mammoth" machine is economical, and therefore is here to stay. It saves time and labor—"cuts the cost of production," gives as satisfactory percentage of hatches as any small machine, and, most important from the poultryman's standpoint, the chicks are as strong and vigorous as they are in any other method of artificial incubation.

The "mammoth" machine makes possible the development of great poultry plants. The same rules apply
in poultry keeping as a business as are found in manufacturing or merchandising; the closer the margin the greater the volume of business necessary for large profits. Everybody knows that poultry does pay even on a small scale and the large poultry plants have established conclusively that with proper equipment and management the profits increase.

Calling the type of machine used on the large poultry plants a "mammoth" is really a misnomer just as though one were to call a battery of oil machines a "mammoth" oil machine. Granted that in capacity it is "mammoth," the most modern type of construction is a machine that can be purchased in small sizes and expanded later from time to time as business warrants without great expense. It is this feature that opens up the tremendous possibilities in poultry keeping to the man of small resources and gives him a chance to grow and develop into unlimited business, without discarding any part of his original investment.

Many poultrymen while recognizing the success waiting them with a big plant, cannot suddenly expand their facilities. They know that growth from year to year will in due time put them in position to have the large plant but they also appreciate that by waiting they will have to meet the competition of others who have the modern machines and lower operating costs. Happily for this dilemma, there is a ready solution. It is in custom hatching.

Custom hatching is the easy steppingstone to increased profits, since it not only is an added source of revenue, but also affords the desired opportunity to increase the owner’s own volume of poultry production. First, custom hatching will pay for the cost of the machine, and then it will turn the owner’s eggs (when they are cheap) into baby chicks salable at large profit, or to be held until maturity at even better profits on fancy stock.

In considering this subject let us pass from generalities into specific illustrations. We will ignore the cases of the poultry plants where the facilities are adequate to handle any problem of equipment and production and take up that of the poultryman who hatches say 200 or 300 eggs at a time and perhaps has 600 or 700 chicks in a season. He has had experience enough to realize that he could more than double his profits if he could double his capacity. But he also knows that doubling his hatching capacity would mean doubling the amount of work, responsibility and worry, especially during hatching.
This would mean increased help and not much higher net earnings.

At this point, were he to install a sectional hot water incubator he would find in operation, regardless of how large the machine, the tending of the fire would take no longer than the trimming and filling of one oil lamp. The worry over regulation and danger from fire would be eliminated, because of the sectional regulator safeguards. The time necessary to turn the larger number of eggs would be relatively small. In short, he would be spending no more time on the hot water machine than he did on the small oil machine and still would be handling anywhere from five to fifteen or twenty times as many eggs.

When it comes to figuring operating costs the average would be 1 cent per 1,000 eggs per day or 21 cents for the hatching of 1,000 eggs. As to the revenue the very lowest charge for hatching anywhere is $1.00 per tray of 75 eggs and from that up to $3.00 per tray. One section of the incubator would hold eight trays, making the return from $8 to $24 per section and this would be multiplied by the number of sections in the machine. For instance in a 6,000 egg machine there would be ten sections.

There would be no difficulty in keeping the machine filled as it is the experience of every custom hatching operator that he has more eggs offered than he can handle. Oil machines cannot compete in this work in price or efficiency. A good share of the trade comes from men who own oil machines and who want to be relieved of the trouble and worry.

In the early part of the hatching season the machine operator would use his machine exclusively for custom work. In the meantime he would be selling his own eggs and taking advantage of the demand which is not usually supplied until about Easter, when eggs become more plentiful. Then he could hatch his own eggs. He would have the capacity so that one run would probably provide all the chicks he cared to handle. If he desired, the surplus baby chicks could easily be marketed at from 10 to 15 cents each or even more according to variety.

With average results, the machine would pay for itself in a short time and thereafter the operator would have the opportunity to produce just as many chicks as he could handle in his own plant and still have the surplus revenue from the hatching for neighbors. It is the general experience that each year the operator increases his hatching facilities, finding that in the custom work as a "side line," there is a splendid profit. In the sectional construction one or more sections can be added at any time, just like adding sections to a sectional bookcase. If necessary, the whole machine can be removed to a larger incubator cellar. In the modern design, the parts go through any ordinary sized door.

In recent years, wonderful progress has been made in the hot water incubator designs. The whole tendency has been to make them more popular priced, more automatic, simpler in operation and capable of satisfactory results without technical knowledge. Today some of the mammoth machines can be installed by any man of ordinary ability without the assistance of factory experts. He can choose whatever size he desires and have it grow as his business grows. By utilizing it he can feel assured that it will produce steady profits and assure more than a livelihood. The fact is, a man after operating a successful mammoth coal-burning machine, would not take small oil machines as a gift.
January
LIBERTY HYDE BAILEY

Endlessly stretches the snow
The sun stays low
The pinched airs low
Through shivering tree-heads bare,
Scant windy birds are in air
And the lead-blue film is everywhere;
The deeps of the woods lie near
The footless ways are clear
Scoured in the sleep of the year.

Glisten and freeze on field and pond
The lines are unbond!—
And the gauntlet is stript to the ends and beyond.

'Tis now that the four-winds meet
'Tis now that the world's in my feet,—
Call of my heart, be fleet be fleet!

Jo
The snow!
THE HOME OF A BIRD LOVER

By John A. Murkin
Editor of Southern Poultry Magazine

SITUATED on the Gallatin Boulevard, about two and one-half miles from the city of Nashville, Tenn., is the magnificent country home of Mr. Percy Warner. This estate, which is known as "Renraw," consists of over one hundred acres of gently sloping hills, covered with stately, wide-spreading trees, and for natural beauty and surroundings is not surpassed by any other home in this whole section of the country. Leaving the boulevard, or main thoroughfare, which traverses one of the most charming sections of middle Tennessee, passing between two massive stone gate posts, and along a circuitous roadway, bordered on either side by velvety lawns and beautiful shrubbery and trees, one comes not only to the home of a bird lover, but to the homes of hundreds and hundreds of the most beautiful specimens of the feathered tribe. Birds of all kinds and from all countries can be seen here. Mr. Warner has been a lover of the feathered beauties all his life, and is never so contented as when away from the business cares of his office and among his hundreds of beautiful winged pets, who seem to know him and welcome his coming with their various notes and musical sounds. About ten years ago, Mr. Warner began planning the "Renraw Aviaries," and each year has added to his collection until now he is the happy possessor of almost every known variety of pheasants, cranes, and ornamental birds. His collection of rare and beautiful birds is said to be one of the finest in the world. While Mr. Warner took up the breeding of pheasants, etc., as a pastime and recreation, he raises many birds each year of the various varieties, and has made many shipments to various states throughout the Union. He has been very successful, especially during the past few years in the breeding of pheasants, bringing thousands of the little fellows up to maturity, and the demand has recently become so great for these birds that he will breed them even upon a larger scale in the future. The young birds are all raised in the open fields, and under conditions as near to nature as possible. At a certain age, or about the time they begin to learn to fly, they are removed to the aviaries or pens, of which there are six divisions, something over 1,000 feet in length each, and divided into pens of about 20 feet square. The aviaries or pens are all built under immense spreading trees and surrounded by beautiful shrubbery of all kinds, which make it a beautiful sight. It will, no doubt, be of interest to our readers to know something of the many varieties of birds to be seen at Renraw Aviaries: First, there is the Argus, from Sumatra, the rarest of the pheasant family, and of which there are very few specimens in America; then there is the Satyra, the Temmincks, and the Cabots, members of the Tragapgon family, these birds are very rare and interesting, and are also from Sumatra. In the Firebacks, Mr. Warner has the Siamese, the Viellots, and Bornean, these birds being from Sumatra and Borneo. Then there are the Soemmerings, from Northern China, the Elliot's from Southeast China, and Impeyans from the elevated forests of the Himalayan Mountains, the Manchurian pheasants from the mountains of Tibet; the Lady Amherst from Eastern Tibet, the Golden from Western China, the Swinhoe from Formosa, Silvers from Formosa, the Melanotus from Northern Burmah, Anderson's Kellege from Burmah, the Reeves from Northern China, the Mongolians from Mongolia, Ringnecks, White pheasant and Black Necks from England, Chacalacas from Mexico, the Curassows, or the Royal pheasant, from South America, and the Peacock pheasant found in India and China. Besides this interesting collection of pheasants, which com-
prises almost every known variety, Mr. Warner has one of the most interesting collections of cranes in America. These beautiful birds may be seen at any time walking over his beautiful lawns, and present a striking appearance with their rich plumage against the green background. Many of them are very gentle, coming up to the visitor as if in the act of a conversation.

A very interesting member of Mr. Warner’s crane family is “Rufus,” a very tall and stately species of the Sarus variety. Rufus, as he is familiarly called over the place, is pretty much his own boss, and walks around from place to place, as though he were a regularly salaried employee, looking after and caring for the various birds. The varieties of cranes to be found at the Renraw Aviaries are the Sarus, the Stanley, or Paradise, and the Damoiselle from Northern Africa, the African Crowned from Western Africa, and the Manchurian from the country of Manchuria. In peafowls, Mr. Warner has the Indian from India, the Java Peacock from Java, the common and the White, both from India, and several crosses which are very interesting. In ornamental birds one may see at the Renraw Aviaries, the Tiname from South America, the Great Crowned Pigeons from New Guinea, the Crested Screamer from South America, the “watchdog” of the place, whose thrilling shrieks can be heard for a half mile, when he sees a hawk coming anywhere near around, and who is always standing guard of the Renraw Aviaries; the Formosan Teal from Formosa, Shaws and Timminck Sonnerrat, Jungle Fowls, the Wild Yucatan Turkey from Yucatan, Central America; Mandarin and Wood Ducks, and the Chaparel Cocks from Texas, whose chief diet is young rats and mice and sparrows, which they kill by knocking the heads of their prey against a stone. Mr. Warner has, also, a number of varieties of doves, quail, canaries, and in poul-
try, nearly every variety of American breeds can be seen walking around, from the diminutive little bantam to the tall and stately Brahmases. Mr. Warner is constantly adding to his already large and famous collection. A very interesting fact concerning the "Renraw Avairies," is that while many of the pheasants, cranes and other birds are allowed their liberty, and all of them full-winged, it has been on few occasions that any of the birds have ever left the place.

EFFICIENT USE OF FARM LABOR

By E. H. Thompson

Assistant Agriculturist, U. S. Department of Farm Management

The problem of obtaining good farm laborers is one which presents itself to every farmer who has a place of any size where he needs to have additional help during part or all of the year. The first difficulty for such farmers is to secure men who can be trusted and who have a knowledge of how ordinary farm work should be carried out. Unskilled labor is usually not very satisfactory on the farm because there is no place which requires more judgment on the part of the workmen than does that of the ordinary hired man’s work on most farms in the eastern states. It is not as though he had one particular kind of work to do through the different months, but in the course of the year he will be at an immense number of farm operations, each one of which requires more or less of a technical knowledge of certain operations.

Much has been written on the problem of agricultural labor, of its scarcity, of its faults and of its uncertainty, and if the question was asked of a large number of farmers what their greatest difficulty was at the present time, a large propor-
tion of them would undoubtedly say that it was the hired help proposition. It is not the purpose of the writer, however, to treat of the difficulties encountered in securing satisfactory help on the farm, but rather to mention a few things regarding efficient management of this help when once secured.

In the present day of business activity when that which we term scientific management is being applied to all of our large industries, it would seem that the application of this same science to the farm might well be considered. The problem is a much more difficult one than at first it seems, owing to the fact that so many uncertainties enter into the labor during the growing season and so many influencing factors which cannot be governed affect the work. A manufacturer having a large force of workmen can plan on each one being able to do a specified amount of work each day, or at least putting in a certain number of hours, as the conditions under which these workmen must labor are practically uniform. On the farm, however, the problem of keeping even one or two men efficiently at work is a much greater one.

Whatever capital a farmer may have invested in land, buildings, and equipment, in order to make the best use of this capital he must have a certain amount of labor, and at the right time of year. To illustrate, a dairyman may follow a rotation of corn for silage, small grain, and alfalfa hay; or, instead of seeding alfalfa with the small grain, he may use clover and timothy and have a permanent field of alfalfa. He knows in a general way that the field work will require two or three men, as the areas may demand, and the same as to work horses. At harvest time extra help will be needed, but this is not a serious problem as usually neighbors are ready to exchange labor at such periods. He realizes that the work on the corn and small grain will not seriously interfere with each other. The corn will have been laid by before the small grain is harvested. But the first cutting of the alfalfa, his main hay crop, will fall at a time when the corn needs frequent cultivation. The alfalfa work will not wait, neither will the corn. Con-

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**Figure 1. Curves Showing Distribution of Man and Horse Labor by Ten Day Periods on a Dakota Grain Farm.**
sequently he must sacrifice the work on one to do that on the other, or else have a great deal of extra labor—both man and horse—at that particular time. The second and third cuttings of the alfalfa fit in much better with the work on the other crops. This one rush period, however, is of vital importance as neither crop can well be neglected. However, when the corn is laid by, the haying done, and the small grain harvested, this same farmer finds that he has about a month on his hands with teams and men doing practically nothing that really counts in the income of his place. The arrangement of his rotation meets the needs of his dairy nicely, but did he consider the fact that corn and alfalfa, both splendid crops in themselves for the dairyman or general farmer, are strictly competing crops for the labor at the same time of year? The amount that he can grow of each of these is only about one-half as great as if the labor on them came at two different periods, or even if the labor on the first cutting on alfalfa could come at different times.

One very prominent dairyman once remarked to the writer that although he had planned on raising nothing but corn silage and alfalfa, together with some small grain, he did not see how it was going to work out for the simple reason that the two crops, corn and alfalfa, would not fit together on the labor schedule. If he provided enough workmen and teams to care for a sufficient amount of these two crops at that period of the year, he could not furnish work for all of them during the rest of the year. This instance furnishes an example of how necessary it is to plan the rotation of the farm to have the work on the crops come at separate periods.

Figure 1 illustrates the distribution of man and horse labor on a farm where small grain was the only crop grown. It shows very strikingly the unequal distribution of labor on this place, a condition that is hard to remedy without a material change in the planning of the farm.

In the curve shown in Figure 2 is represented the actual cost of man labor per month on an eastern dairy farm. It shows very strikingly the high cost of labor during the winter.

**Figure 2. Curve showing actual monthly cost of man labor per hour on an eastern dairy farm.**
months. Most farmers are under the impression that an hour of labor costs them a great deal more in the summer than it does in the winter. True it is that the wages for the summer months are higher than for the winter months, but the hours actually worked on farms prove that the rate for man labor, and even greater for horse labor, is much higher in the winter. However, in figuring the labor costs for the farm as a whole, an average rate for the year should be used.

One of the characteristics of most well organized farms then is that the labor will be distributed evenly throughout the year. This applies not only to the man labor but to the horse labor as well, and this is best accomplished by diversification. It must be recognized in this connection, however, that weather conditions will greatly affect the best plans, as a couple of weeks of rainy weather will often retard work on a certain crop only to double the work that should be done in the next two weeks. These are unusual conditions, however, and have to be handled the best way possible.

Coupled with the right use of labor on a place is that of having a good arrangement of buildings and fields and the easy access to implements and tools with which to work. How easy it is for a farmer to spend fifteen to twenty minutes twice a day traveling between several poultry houses only to feed hens and chickens where nine-tenths of this time could be saved if a little forethought had been given when building the various houses so as to place them near together. The same thing holds true in every part of the farm layout. Some farms do not lend themselves to such arrangement, owing to topography many distant fields are necessary and the time it takes to get to them cannot be saved in these cases. Another instance is where cattle are driven from the pasture to the stable morning and night. It may take someone only five minutes to do this each time, but this twenty minutes a day and for five months in the year counts up into a very large item, and if this time were put on some productive enterprise it would show a different result on the farm books at the end of the year. So often little thought is given to this efficient use of time on the farm. More attention has been paid in the past to the planning of rotations as regards the fertility of the soil and income as determined from special enterprises rather than on the farm as a whole.

One great trouble in the planning of farms is that the persons doing it fail to consider the farm as a unit. They study the different enterprises and fail to recognize the relationship that each bears to the entire proposition, and in this way are often led to wrong conclusions as to the real practicability of the farm organization. One must consider that when workmen are hired at the beginning of the year that all of the crops on that place are to bear their respective share of the work and that the time in which these men are idle or the time which they are not working at a directly productive enterprise must be distributed over the several productive enterprises. On farms in certain regions some crops which utilize the farm labor only a few months in the year may be profitable enough so that no other lines need be followed, but this is the exception rather than the rule as found on the most profitable farms. Specialties are all right, but the farmer usually needs more than one of them. It should be kept clearly in mind that a farm is a combination of units, each having an important relation to the entire business, and that the work on these should be so arranged as to utilize all the available farm labor.
EXPERIENCES ON A CATTLE BOAT

By E. V. Hardenburg, '12

Along with a few other college men and numerous homeward bound Englishmen and Germans, we set out from a Boston shipping office to the Warren Line Company's dock where the good four masted steamer "Sachem" was being burdened with cattle, corn, hay, water, sugar, etc., as she swayed peacefully at her wharf. It was well towards seven o'clock in the evening when the last bellowing steer trotted over the gang-way to take his place with the other nine hundred and twenty-five, because various car-load lots from western Canada and Kentucky were late in arriving. From evening until midnight, twenty-six of us were kept busy arranging and tying the tired and stubborn brutes in rows facing each other on each side of both upper and lower decks. This proved a tedious and difficult piece of work since the cattle were driven aboard promiscuously with small hitching ropes dangling from their necks. The cattle, being shipments of four companies, were separated into company lots and groups of from three to five men each were assigned to definite numbers of cattle—usually 30 to 40 head to a man. After this work was completed, we saw that the little tender that had tided us out of the harbor had forsaken us and the lights of Boston could no longer be seen. Naturally we expected a meal after this for in the excitement of embarkation we had, one and all, neglected supper; but not even cold water could be found. So we made our way astern to look over what was to be our retiring quarters, for we knew not how long. The first surprise in store was the condition of the bunks arranged one above the other and on three sides of the little room. The entire bedding consisted of straw enclosed by bagging, making a thin mattress which lay in a wide shallow box of inch material. Not stopping to undress we took to these quite readily, but long before day broke upon us, those of us who are easily troubled with the creeping fauna that travel by night were given ample opportunity to realize our environment.

The appointed watchman called such as were fortunate enough to be asleep and by 5 A. M. we were busy watering the thirsty steers. The water, all of which was transported in the ship's hold, was available from cylindrical hogsheads at seventy-five foot intervals on either side of both decks. There was left a narrow margin in which to work and it often proved to be too narrow. Probably due to the large amount of hay fed the animals and the salt sea air, they drank between four and six pails of water apiece every morning, and it is ever the delight of such an animal to drink his neighbor's allowance. After watering, the cattle were fed enough baled hay to keep them eating until about 10 A. M. Then we cleaned the alleys, and were given a half hour rest before breakfast which generally came about 8 o'clock. Indeed, after three hours work on empty stomachs, it was difficult to realize that breakfast should not be dinner. The scanty repast at this hour for the twelve days' passage consisted mainly of coffee without milk or sugar, hardtack, buns, and boiled potatoes with skins on. At 10:30 A. M. the cattle were fed shelled corn at the rate of about six quarts apiece. During the forenoon, the following day's allowance of corn and hay was hauled up through the hatchways by means of donkey engines, on both fore and after decks. Dinner was served at five bells or about 12:30, and consisted of a menu very similar to that of breakfast with the possible addition of salt fish or salt horse, and Irish stew but no beverage. Everyone was supposed to go to the galley in turn to bring the food which was transported in
large buckets. Each man cared for his own plate, cup, knife and spoon and it was usually advisable to hide them, so that promiscuous cutlery and china (so called) could be found from the hold to the top-mast.

In the afternoon a large amount of hay was fed,—in fact enough to suffice for both feed and bedding as hay was all that was used for the latter purpose. None of the manure is removed from the ship during the journey but after unloading in port it is given to the party cleaning and white-washing the boat. It is used on truck farms around, Birkenhead and Liverpool, England. This manure contains a large amount of undigested corn and wasted hay, and by the way, much of the hay was of an inferior grade raised in Maine. After the usual cleaning up, we were ready for supper at 6 p. m. The only variation of this menu from others was the presence of tea. Jam and marmalade were forever present on the English bill-of-fare, and once a week we were given a favorite dish known to the English as plum duff but quite resembling our suet pudding. This relish lacked the characteristic seasoning of American dishes, nevertheless, it was much sought for by all, as evidenced by the fact that the one who took a turn at going for it, made away with a goodly share of it before acquainting the others of his whereabouts.

A glimpse of old Ireland was a welcome sight on the evening of the eleventh day as it foretold of the riddance of our bovine charges by another day. Strange to say, the cattle detect the approach of land through a sense of smell, and manifest their knowledge by a low bellowing. Just one day after the first sight of Ireland, we rounded the cape into the Mersey River and anchored in the harbor between Birkenhead and Liverpool, not to unload until morning as it was Bank Holiday throughout the island. The knots were so loosened as to make a quick delivery when the time came. In the morning each man was furnished with a pointed stick and as fast as the head-boards could be taken down and the knots untied the fat and tired cattle scampere over the gangway into the slaughter yards to await an early fate.

In accordance with the federal law all these cattle must be slaughtered within seven days after entrance to the port. Though this may be taken in the nature of a precaution to prevent the spread of any contagious diseases, there can be but little danger as all live meat is inspected at the United States Government port by the Government veterinarian, previous to being loaded on the ships. These cattle ships usually require about two weeks for the cleaning and reloading before the return voyage is begun. The return cargo consists entirely of freight, being mostly made up of manufactured articles such as machinery, cloth, cutlery, and the like.

Before the novice begins such a trip as we have endeavored to narrate, a little previous knowledge of the bill-of-fare, and sleeping quarters would not be amiss. In other words it would be advisable to carry along a pillow of some coarse texture, and a limited supply of canned provisions which may be readily procured just previous to embarkation. Though many things may seem hard the experience is strikingly novel, and one never to be regretted, or forgotten.
The Cornell Countryman

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January, 1912

Trustees Adopt Plan

At a meeting held in New York City on December 16th, the Board of Trustees of the University adopted with slight modification the new plan for the administration of the College of Agriculture as proposed by Dean Bailey and as contained in the resolutions of the Trustees' Committee of which Ex-president Andrew D. White was chairman.

This step is a cause of deep gratification to those of us who have the welfare of the College of Agriculture at heart, and who have followed the Trustees' Committee in their work this past fall. Briefly, the Committee was the one appointed by the Board of Trustees to confer with Dean Bailey concerning his recommendations. They held two meetings which were attended by the Dean. As the result of these a hearty and unanimous agreement was reached by the committee and Dean Bailey as to the form of regulations to be presented to the Board of Trustees for the future management of the College of Agriculture. The committee's report to the Board was, after a careful and painstaking consideration, unanimously adopted, with a few minor changes.

New Agricultural Council

The new plan of administration goes into effect January 1st, 1912. After this date the management of the college will be subject to the general supervision and control of the full Board of Trustees, and the immediate supervision, instead of being in the hands of the Executive Committee of the Board, as now, will be entrusted to a special committee of eleven persons to be known as the Agricultural College Council.

This Council is to be composed of the five Trustees appointed by the Governor; the President of the University; the Trustee elected by the State Grange; the State Commissioner of Agriculture and the president of the State Agricultural Society, both ex-officio members of the Board; and two Trustees to be selected by the Board itself, one of whom is to be an Alumnus Trustee. The Director of the College of Agriculture and the Treasurer of the University, although not members of this Council, are expected to be present at its meetings and to take part in its deliberations. It is to hold four regular meetings a year and as many special meetings as it may think necessary. When practicable, one of its regular meetings is to be held at the same place as, and as short a time as possible before, each of the regular meetings of the Board of Trustees.
In the enactment creating the Council, its powers and duties are defined as follows:

"Said Council shall have the following powers and duties and those naturally incident thereto:

"It shall have charge of presenting to the Legislature the needs of the college and of securing such appropriations as the State may deem proper to make. Said moneys when appropriated shall be drawn from the State by the Treasurer of the University as provided by law and be carried on the books of the University and be disbursed by the Treasurer thereof.

"It shall prepare each year a budget or detailed statement of the moneys to be expended in carrying on the work of said college during the then ensuing year, which budget, however, shall not become effective unless and until approved by the Board of Trustees.

"It shall provide for sufficiently and properly auditing all disbursements made in behalf of said college, all vouchers therefor being filed with the Treasurer of the University.

"It shall fix the time and place for holding its meetings and the manner and time of calling the same.

"All professors and assistant professors in said college to be elected after the passage of this statute shall be nominated by the Director to the Council after advising with the President of the University, and if approved by the President of the University and said body, the nomination shall be presented by the President of the University to the Board of Trustees for action, confirmation in case of professors being by ballot.

"All other persons engaged in carrying on the work in the said college whether of instruction or otherwise shall be appointed by the Council on the nomination of the Director, except that said Council may make such regulations as it deems proper, conferring upon the Director the power to make ad interim appointments of any of the persons designated in this clause.

"But neither the Council nor the Director shall have the power without the consent of the Board of Trustees either in the respects above mentioned or otherwise, to incur liabilities or expenses in excess of the amount appropriated.

"Said Council shall appoint a committee of four members which shall include the President of the University and the chairman of the Building Committee of the University, which, subject to the approval of said Council, and of the Board of Trustees, shall have charge of the location and construction of buildings to be erected for the purpose of said State College. The Director of said college and the Treasurer of the University shall be expected to be present at the meetings of said committee and take part in its deliberations.

"Said Council shall have the right to designate at least one member of the University Committee on Grounds.

"The Board of Trustees reserves the right to at any time alter, amend or repeal the foregoing or any part thereof."

The Board elected Willard Beahan '78, of Cleveland, and John H. Barr '89, of New York, to be members of the Council as provided in the statute. Both these men are alumni trustees. Besides them, the members of the Council will be Thomas B.
Wilson, of Hall; Henry W. Sackett '75, of New York; Frederick C. Stevens, '79, of Attica; John N. Carlisle, of Watertown; Frank H. Miller, of New York; President Schurman; William F. Pratt, of Batavia; and Raymond A. Pearson '94, of Albany. Two of the _ex-officio_ memberships are combined in the person of Mr. Pearson.

**Dean Bailey's Recommendation**

The report of Dean Bailey to the Board of Trustees contained the following passage material to the government of the College of Agriculture:

"To my mind the solution of the problem is one of great simplicity, and it all lies with the University itself. It is merely this: All state work at Cornell should comprise one administrative unit. The Trustees appointed by the Governor with probably those representing popular interests, or others, and the President of the University, should constitute a small council or committee to have charge of the state enterprises, reporting to the full Board, and meeting at stated times (say four times a year) of its own right and with the attendance of the Director of the given state work. This council should audit the accounts of the state moneys. The _ad interim_ business of the College of Agriculture should be carried on by the Director of the College, with the advice of the President of the University."

**Dean Bailey's Attitude**

In a recent conversation with the Editor of the _Countryman_, Dean Bailey, when asked if he would remain, said that the only effect the action on the part of the board of Trustees will have on his decision to sever connections with the College of Agriculture is that any action on his part will be deferred until his plan of administration had been put into operation. He added that the plan was so largely of his own suggestion that he felt it his duty to remain until the new system had been put into practical and substantial operation. How long or how short a time that would be, he was unable to say.

It is a sincere cause of delight and satisfaction that Dean Bailey will remain to direct the readjustments in the College of Agriculture as he has outlined them, and it is our earnest hope that at the end of this time circumstances will be such that it will not be necessary for him to sever his connections with the College of Agriculture in order to live his own life.

**Farmers' Week**

For one full week in each year, the College of Agriculture throws open its doors to the farmers of the state and devotes itself to their interests in a special way. The week is known as "Farmers' Week," and will be held this year February 19th-24th. The attendance is expected to exceed twenty-five hundred.

A full programme of the week includes approximately 300 lectures, 15 conferences, and many exhibits and demonstrations. It is so arranged that a connected line of work in any branch may be followed for the week, as in fruit-growing, poultry raising or dairying, or if desired one may divide his time between these subjects and many others, social, economic
or educational in nature. Every effort will be made to get into close personal touch with each visitor in the endeavor to help him in his individual problems.

Former students who are contemplating a return at this time will be glad to know that a country life programme of especial interest to them is being planned for this week.

It is hoped that the interest and support that has always been shown by the students during this annual event will be given again this year as the help and cooperation of the students go a long way toward making the week a success.

One of the most important departments of the College is the one devoted to “Extension Work” and known as the Extension Department. The December “Announcer” is devoted almost entirely to this phase of college work.

Aside from counselling in the extension work of the various departments of the College, the Extension Department has supervision of the following enterprises: “special schools, to be held in different localities; work at the fairs; reading courses and correspondence work; farmers’ week; excursions to the College; Experimenters’ League; management of resident or local agents; mailing room work; welfare work of any kind in the rural communities; general publicity and helpfulness of the College of Agriculture to the people of the State.”

An innovation will be the “Travelling Schools” of which the “Announcer” says:

“In response to the demand of rural communities to give adequate instruction with the necessary teaching material at hand, to those persons wishing further opportunity to study given farm problems, railroad passenger cars will be equipped with tables, chairs, charts, models, microscopes and other necessary teaching material. In this way a class of twenty-five to fifty persons, of whatever age, may be carefully instructed for a few days or two weeks as arranged. This will give opportunity for instruction in subjects requiring special demonstration material and will naturally follow the extension schools. The car will stand on a siding during the instruction and can be readily moved to the next school. For further information, address Extension Department.”
The third assembly of the year and the first at which the Short Course students were with us was held in the Auditorium on Thursday, December 7. Selections were rendered by both the Glee and Mandolin Clubs and everyone was not only surprised but also decidedly pleased by the progress shown by both of the clubs so early in the season. But, if possible the two selections rendered by the Girls Glee Club, who appeared for the first time this year, caused even more favorable comment.

It has been said that our December Assembly is the best of the year, and Dean Bailey must have realized this, for his talk, which as usual was the feature of the evening, was most enjoyable. He spoke in part as follows: The December Assembly is the happiest of the year because we have not yet begun to thin out. Our college may be compared to a military organization. It is important that each student should regard himself as part of such an organization and learn promptness, efficiency, clear cut methods, timeliness and the ability to seize an opportunity. Another lesson from the simile of a military organization is that we should stand up straight and walk on our heels. Be conscious that you have a backbone. People who walk as if they meant it are usually the ones who do things.

In regard to the student room to be furnished downstairs, its purpose is to relieve congestion in the halls and library and to provide a place where the students may spend their odd
hours. Smoking will not be prohibited. Smoking is a personal affair although I see no reason why a young man with a clear conscience and a good digestion should need to calm his nerves by building a fire in his mouth. I will leave it to the smokers whether they will regard the room as for their own enjoyment only, or for the enjoyment of other people also.

I assume that you have come here to acquire knowledge. But you will go away feeling that you know very little. Most people do not know what knowledge is. A man has not knowledge of a thing until he has reasoned it out from all points of view by means of research and study. The important thing is that his mind shall be open. Prejudice and habit must be kept out. A man cannot know what kind of soil he has until he examines it without prejudice. Politics are governed by prejudice. The reason why we are making little progress in tariff reform is that many people have a decided opinion on certain schedules based not upon knowledge but upon prejudice. A student is making real progress when he realizes that he knows very little. Always demand the evidence or reasonableness of what is presented to you.

Prejudice and habit dominate our eating also. There is no such thing as animal and spiritual pleasures any more than there are good trusts and bad trusts. All trusts have good and bad in them. Regulation encourages the good and discourages the bad. It is not the attitude of a trust that is bad or good. Our attitude toward eating is wrong. Cookery has come to be a process of concealment. We prepare our food so that we cannot recognize what is in it. It is worth while for young men and women to consider the importance of naked products with their natural odors. It is a great thing to have things as they are.

There is a great satisfaction in being near the sources of these products. To me the pumpkin is the most beautiful of fruits. It is wonderful how such a small plant can produce such a big fruit. One of the biggest mysteries of nature is the growth of simple plants. When a man has enough money to live comfortably he gets much enjoyment out of this contact with nature.

Misrepresentation seems to be innate in human nature. We make steel buildings appear as though they were made of brick. Why should we not see them as they are.

The result of our attitude toward eating is indigestion. Indigestion is a pernicious habit unless a person is diseased. The way to correct it is not by the use of drugs but by correcting one's habits of life. A person twenty-five years of age ought to know better than any physician how to regulate his health. We must get back to the unadulterated and the farmer is the man to get back first.

The Agricultural Seniors held their first social function of the year as an informal dance which was held in Odd Fellows' Hall on the evening of December 14th. The affair was a great success.

Dr. Gilbert has been elected chairman of the Score Card Committee of the National Corn Exposition. Other members of the Committee are Prof. English of the United States Department of Agriculture, Prof. Pugsby of the University of Nebraska, Prof. Williams of the Ohio Agricultural Experiment Station and Prof. Wianko of the Indiana Experiment Station.

On Wednesday evening, December 13, Dr. S. H. Gage of the Medical College gave a lecture to the students of Plant Breeding upon the subject of Human Heredity.

Prof. H. H. Wing of the Animal Husbandry Department went to New York on December 12th and delivered some lectures at Columbia University.
Prof. W. A. Riley of the Entomology Department, who has been quite seriously ill is improving rapidly at the present writing.

* * *

The class in Mechanical Drawing is so large this term that the size of the class will be limited. All students who intend to take this course next term should see Prof. Baker.

There is to be an exhibition in the Drawing Department during Farmers' Week again this year.

* * *

BASKETBALL

On December 7th the Agricultural basketball team began its season by defeating Cascadilla School 23-1. On December 9th M.E. was defeated 23-21.

The lineup was as follows: 1 f., E. A. Brown, '13; r. f., T. M. Gray, '15; C. G. Crittenden, '14; N. D. Steve, '13; c., J. A. Webb, '15; l. g., D. D. Ward, '12 (captain); r. g., R. Steve, Special

This is unique in the fact that it is the first thing of its kind to be undertaken by a University.

* * *

Mr. J. T. Loyd, assistant in Biology, starts for Columbia, South America, the middle of the month. He will do some general Zoological collecting in the Andes for the American Museum of Natural History at Washington.

* * *

At a meeting of the Junior Class held in room 292 after the last Assembly after electing M. B. Goff as
temporary chairman and temporary secretary the following officers were elected: H. G. Honeywell, president; E. A. Brown, vice-president; C. Bane, treasurer; Miss C. A. McKay, secretary.

Later on it was decided that the class should arrange for a smoker to be held soon and committees were appointed to arrange this and to plan for the usual banquet to be held in the spring.

* * *

Three members of the faculty of the College of Agriculture are to deliver lectures at Columbia University this winter in a popular lecture course in agriculture. Professor H. H. Wing will speak on December 13. His subject is "Practical Problems in Developing the Dairy Herd." On January 24 Professor E. S. Savage will lecture on "Problems in Feeding the Dairy Herd." Professor E. O. Fippin will speak on February 7 about "Soil Drainage Problems and Practices in New York State."

* * *

Dean Bailey has planned a series of Sunday noon talks for the winter course students to be given in Barnes Hall each week. The first of these was held on Dec. 4, with the topic, "You are background men; you should familiarize yourself with your background of literature and civilization." The Dean went on to say that the farmer was particularly and in a peculiar sense a part of his background but that history, literature and civilization was a wider background and one which all men were subject to. A larger part of this background will be found in the Bible which represents the thought of the race and has more influence on the development of our own civilization than any other book.

* * *

To have obtained honor in one's life work is worthy of great praise, but have attained to the highest honor possible in that work is a height to which few of us ever get. Such, tho, has been the good fortune of Prof. John Henry Comstock of the Entomologi-
An Indication of Prosperity
Throughout the country during the past year more up-to-date machinery has been purchased and installed on the farm than during any previous ten years. This demonstrates not only the prosperity of the farmer, but his alertness in seizing upon every means to increase the yield per acre, and in preserving the soil. This statement is based not only on personal observation of the agents of the Department of Agriculture who have traveled all over the country, but on the statements of sales of farm implements from the large dealers throughout the country.

* * *

Reclaiming New York State Land
A great deal of money has been expended for reclaiming tidal lands without obtaining permanent effective results. The failures have been due principally to the lack of cooperation among the landowners; to ignorance or disregard of the fact that, unless preventative measures are taken, many marshes will settle to an extent that will render pumping necessary; and to the insufficient size, or poor construction and maintenance of levees, sluices and ditches.

Upon the efficiency of the drainage ditches and sluices will depend the elevation of the ground water, and the depth of the water table below the ground surface will control the kind of crops that can be raised. Land 1 to 1½ feet above the water table will furnish good pasture; 2 to 2½ feet above, good hay and corn fields; and land 4 to 4½ feet above good wheat fields. In draining and plowing due care should be used not to injure the soil structure.

* * *

A Well Filled Ice House
The economic value to the farm of a well-filled ice house of clear, pure ice, is shown in Farmers’ Bulletin No. 475. The bulletin does not treat of the ice crop as a source of direct revenue but as a factor in the economies and comforts of the country home.

* * *

More Capital to Move the Crops
The American banking system is behind European nations in providing banking facilities for farmers. The Bank of France, the Bank of Belgium and the Swiss National Bank all provide special facilities. For the strain on our banking systems during the crop moving season is terrific. The small banks draw heavily on the central banks; they draw not only what they will need but what they might need in case of a crisis. The result is that the American farmer has great difficulty in borrowing moving capital because of the large amount of unutilized capital.

The recent agitation throughout the country gives promise of the needed reforms. The activity of the National Monetary Commission, the interest shown in ex-Senator Aldrich’s plan and the work of the National Citizen’s League are good omens.

The plan of the National Citizen’s League is especially worthy of notice. Cooperation instead of competition is their cardinal principle. By this plan, every bank in the United States would join the National Reserve Association. This association would not do a general banking business like a central bank. It would keep the reserves of the banks, retire all national bank-note issues and substitute its own, and thus be enabled to render liquid the good commercial paper of the banks at any time. A tax would also be imposed to prevent the withdrawal of reserves below a certain ratio.

* * *

Coöperative Association Reorganizes
On November 20th the Bethany-Batavia Fruit Growers’ Association met in Batavia, N. Y. for the purpose of reorganization. A constitution similar to that of the Hood River Valley
Fruit Growers' Association in Oregon was adopted. It was voted to incorporate and the necessary capital stock was subscribed. A board of seven directors was elected to have charge of the business of the Association. The constitution is such as to allow this Association, which is now known as "The Genesee County Fruit Growers' Association," to do all kinds of business, such as the buying and selling of fruit, the manufacture of lime-sulfur, the establishment of industrial fellowships, etc. In fact, to do all things which are commonly done by the fruit growers' associations of the West.

It is of special interest to Cornellians to know that Mr. Roy J. Shephard of the class of 1910 was elected one of the directors and has been made secretary of the board of directors. This is a very responsible position in the new organization and one which Mr. Shephard is well fitted to fill with the highest degree of ability and success. Mr. E. G. Grinnell, one of the prominent fruit growers of this section is the president. This Association has, during the past year, maintained two industrial fellows, an entomologist and plant pathologist, in cooperation with the College of Agriculture. It is expected that this cooperation will be continued for at least another year.

* * *

The difficulty attending the acquisition of sufficient potash for the fertilizer manufacturers of this country need no longer be a source of worry according to Secretary Wilson of the U. S. Dept. of Agriculture. The Bureau of Soils has been making investigations along this line and it is believed that the chemists have discovered a process by which potash can be taken from sea-weed. For some time it has been known that the supply of potash rocks in this country is absolutely limited. As yet no economical process has been found which will disassociate the potash from the mineral silicates so as to obtain the more soluble potash salts available for plant food. The fact that this country pays Germany annually $12,000,000 for potash renders the discovery of such a cheap process highly desirable.

* * *

The awakening of the people to the value of agricultural instruction and to the possibilities of usefulness through extension teaching has created a demand for this instruction far beyond the power of the states to supply. The inadequacy of present equipment for meeting the agricultural educational needs of the rural people has become so apparent that several bills have been presented before Congress looking to additional appropriation for carrying out extension work. The states are adding annually to their appropriations in a marked degree. For example, New York State increased her appropriation from $25,000 to $35,000, Minnesota from $18,000 to $23,000, Nebraska from $10,000 to $17,000, etc. These appropriations show in an unmistakable way the growing interest in agricultural improvement by the states and their confidence in the value of the work of the farmers' institute as well as appreciation of what they have done for agriculture in the past.

* * *

Unreclaimed land worth from one to twenty dollars per acre will be worth from twenty to a hundred dollars per acre when drained, depending on location, elevation, fertility and development. The cost of reclamation will vary widely, but under average conditions thorough drainage should not exceed fifty to sixty dollars per acre. Besides producing financial benefit, draining marsh lands destroys the breeding places for mosquitoes, and reduces the unhealthful conditions that cause malaria, chills and fevers. In New York State there are thousands of acres which could be very profitable reclaimed. The amount of reclaimed land is rapidly increasing owing to the rapid rise in price of good farming land.
FORMER STUDENTS

HARRY MASON KNOX, B. S. A., '01

'01, B. S. A.—Harry Mason Knox was born on the Knox Homestead (a picture of which was published in the May, '10, COUNTRYMAN), at Canton, N. Y. He was graduated from the local high school, after which he took two years' work in Saint Lawrence University at his home town. Then he came to Cornell where he specialized in dairying and was graduated two years later.

He returned to his home farm to work with his father in developing an intensive dairy farm, naming it the "Success Stock Farm." They stocked the farm with Holstein-Friesian cattle, small Yorkshire swine, and Scotch Collie dogs. A special trade was developed in dairy products, fancy milk, butter, butter-milk and cottage cheese being sold. Mr. Knox published and edited the Success Stock Farm Journal and Holstein-Friesian Advocate to advertise the farm and stock in which they were interested.

Three years ago Mr. Knox's father died. The carefully assembled herd, headed by the famous sire Korndyke Queen DeKol's Prince, was sold to settle the estate. Mr. Knox then purchased the farm and proceeded to build up a herd of officially tested animals. Adirondac Pontiac Korndyke and Gem Paul Johanna stand at the head of the herd, the former being a full brother to the famous sisters, Pontiac Clothilde DeKol, 2d, and Pontiac Rag Apple. The other sire is from a cow having a seven day record of 707.8 lbs. milk and 32.8 pounds of butter.

Mr. Knox also has a nice herd of Cheshire swine, the foundation stock of which he purchased here last Farmers' Week. They were shown at the St. Lawrence County Fair in strong competition and won their share of prizes.

Besides being an active farmer, Mr. Knox has been active in the progressive social work of his community. As trustee of his local school he reorganized and rejuvenated it, putting it on an agricultural working basis. Last month he was elected for the second time as master of Silas Wright Grange, and steward of the St. Lawrence County Pomona Grange, he having previously served as secretary of the latter. He organized the first community Holstein-Friesian Breeder's Club in the United States—was its first president, and subsequent secretary for three years. He was president of our Students' Association last year. He is a director of the New York State Dairymen's Association. He is now interested in the country church work of his community, and spoke to his grange on this subject at a recent meeting. Mr. Knox has been called upon to visit district schools this winter and aid in putting into practical operation the teaching of agriculture. He is active in a campaign to build a tuberculosis hospital for his county and is one of the grange committee to put the matter before the legislators of his county. He is interested in the good road problem which the legislators of the country are carefully considering. He has been a frequent contributor to the agricultural press, to dairy publications in particular. At the present time he con-
templates a move in this line where he feels he can extend his influence for usefulness.

'09, Ph D.—Dr. J. O. Morton who has been Professor of Agronomy at the Mississippi Agricultural College has accepted the chair of chemistry at the Texas Agricultural College. He will take up his new duties the first of the year.

'11, Ph D.—Mr. J. K. Plummer with a major in Agricultural Chemistry has recently been promoted to an excellent position in the Division of Chemistry of the Department of Agriculture of North Carolina.

'97, Sp.—Herbert L. Carr is managing a farm for Chas. G. Taylor at Portland, Conn.

'01, Sp.—A. LaVerne Roe is managing a farm near Bridgeport, Conn. owned by Chas. M. Choate.

'06, B. S. A.—H. F. Button writes from Manassas, Va., where he is director of the Manassas Agricultural High School, one of the congressional district schools of Virginia. He also encloses a program of the Farmers' Institute of Northern Virginia of which he is secretary and treasurer. This institute was organized in order to bring the farmers of the locality in touch with the Agricultural High School. It holds corn shows, a traveling school of agriculture, and other meetings at various times during the year. It aims "in every way possible to make the Agricultural High School the leader of the entire District in a better and broader country life."

'06, B. S. A.—Harvey L. Westover has been engaged during the last summer in making a reconnaissance survey of southwestern Washington. About the first of December he went to Texas to assist in making a similar survey in the southwestern part of that state. The work is being done by the United States Bureau of Soils in cooperation with the state geological survey. Mr. Westover's address is care of Bureau of Soils, Washington, D. C.

'07, Sp.—B. F. Wallace is managing a large farm near New York City owned by Francis Newton of that city.

'08, B. S. A.—Miss Alice C. Evans is an instructor in bacteriology at the University of Wisconsin, Madison, Wis.

'08, B. S. A.—A son, John Eddy, was born on November 5 to Mr. and Mrs. Thomas Henry Desmond, 57 Johnson Park, Buffalo.

'08, B. S. A.—Clarence Lounsbury is a field assistant in soil survey, Bureau of Soils, Washington, D.C.

'08, B. S. A.—Horace F. Major has been promoted from instructor to assistant professor of landscape gardening at the University of Missouri.

'08, W.D., '10, Sp.—R. V. Callan is managing the farm connected with the New York State Women's Relief Corps Home at Oxford, N.Y. This position is now under the Civil Service.

'08, W.A.—James G. K. Duer has purchased the Norwood farm of 35 acres at Port Jefferson Station, N.Y., and is running it as a poultry farm. He is keeping 500 White Wyandottes and aims to raise his own grain so far as possible.

'08, W. A.—Solon J. Vail was married to Miss Edith J. Solger at Bridgewater, Vt., on August 16th, last.

'08, '09, W. A., '10, Sp.—Irving S. Warner is managing his own farm at Baiting Hollow, N.Y. He writes that he has shipped some 1,500 barrels of cauliflower this season, had a fair potato crop, and on the whole had a very good year. He is secretary and treasurer of the Long Island branch of the Students' Association.

'09, B. S. A.—Chas. F. Boehler is now with George H. Miller, landscape architect, at 6 Beacon St., Boston, Mass.

'09, B. S. A.—G. C. Manrow is manager of the Jeddo Fruit Farm at Middleport, N. Y.

'09, B. S. A.—C. M. Bennett, who had been representing the federal government in cooperative work in
farm management at the University of Wisconsin, was recently transferred to Washington. His address is care of Office of Farm Management, U. S. Department of Agriculture, Washington, D. C.

'09, B. S. A.—Fred E. Robertson is employed as a scientific assistant in farm management in the U. S. Department of Agriculture.

'10, B. S. A.—F. S. Jacoby is instructor in Poultry Husbandry at Ohio State University at Columbus, O.

'10, Sp.—Claire E. Smith is managing a farm for Edward M. Sheldon at Martinsburg, N. Y.

'10, W. A.—W. D. Sigourney is managing the farm connected with the Western House of Refuge for Women, which is a State institution at Albion, N. Y.

'10, W. P.—Walter James Farley was married to Miss Anna Elizabeth Harvey on Tuesday, Nov. 21st, at Carthage, N. Y.

'10, B. S. A.—J. H. Rutherford is managing a private estate of 500 acres located at Norfolk, Conn. and owned by C. D. Tows of New York City. He gave up his position as manager of a 360 acre farm at Somerset, Pa. about November first.

'10, A. B., '11, B. S. A.—Miss Lydia F. Humphreys is teaching domestic science in the high school at Corinth, N. Y.

'11, B. S. A.—Willis J. Corwin is teaching agriculture and music in the high school at Sherburn, Minn.

'11, Sp.—Guy U. Tiffany is teaching agriculture in a high school at Pine Island, Minn.

'11, B. S. A.—Wallace G. Stephenson is at his home in Ogdensburg, N. Y. He coached the football team of the high school there this fall.

'11, B. S. A.—Waldemar Fries, who has been working for the Buffalo Fertilizer Company, left Buffalo on December 7th for Cincinnati, Ohio. There he is to take charge of the factory records and other office work at a new factory put up by the Inter-
national Agricultural Corporation, of which the Buffalo Fertilizer Company is a subsidiary company. His address is care of The International Agricultural Corporation, Lockland, Ohio.

'11, Sp.—Warren W. Hawley, Jr. is managing his father's farm near Warsaw, N. Y.

'11, M. S. A.—Henry W. Gilbertson is a scientific assistant in the Office of Farm Management, U. S. Department of Agriculture.

'11, B. S. A.—Miss Florence A. Wyckoff is operating her own farm of 74 acres, the Cedar Lane Farm, at Dundee, N. Y.

'11, B. S. A.—Edward M. Tuttle is an assistant in Nature Study.

'11, B. S. A.—Lloyd R. Simons is teaching agriculture in the high school at Gowanda, N. Y. He also coached the school football team last fall.

'11, B. S. A.—R. A. Mordoff is superintendent of the farms owned by Artemus Ward, Jr., of New York City. The seven different farms comprise, altogether, about 4,000 acres. Five of them are in this state, one in New Jersey, and the other, a fruit farm, in Virginia. All but the last are devoted to general agriculture and dairying. Mr. Mordoff's address is Demarest, N. J.

'11, B. S. A.—Tracy M. Morrison is with the department of Soil Technology here. He is at present engaged in making a mechanical analysis of a series of Tompkins county soils. Next term he will assist in the laboratory work.

'12, Ex.—Miss Marion H. Current is assisting in the Home Economics department during the Winter Course.

'12, Ex.—J. H. Weber is with the Jewish Agricultural and Industrial Aid Association, which has headquarters in New York City.

'10, B. S. A.—Hobart C. Young has been seriously ill with typhoid fever at a hospital at Erie, Pa. Mr. Young has been working for a telephone company at Erie.
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<td>26D Chilled Mouldboard</td>
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ITHACA, N.Y.
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FOREWORD

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

As an industry and science, fruit-growing has made rapid progress in recent years. Not so long ago a farm devoted to fruit-growing as its main industry was rare, whereas today there are hundreds of such farms. Until very recently the work of fruit-growing in our Experiment Stations and Colleges has been carried on in connection with vegetables, flowers, and landscape gardening. The work has gradually differentiated until at the present time fruit is considered of sufficient importance to receive the recognition of a separate department.

Although the apple has been grown by the settlers since the early history of our country, commercial orcharding did not begin until the first quarter of the eighteenth century. The apple as we know it was brought to this country by the settlers, the only native species being the wild crab.

The settlers brought with them the seeds of the apple which they planted in the clearings around their primitive homes. The fruit, which of course was inferior in quality, was eaten by the members of the family or made into cider. As the settlers moved westward they carried with them the fruit of their primitive homes, and thus the apple moved westward with the tide of emigration. Seeds of the fruit also fell into the hands of the Indians and by them were carried far inland in advance of the settlers. So rapid was its spread that in 1779, when Sullivan invaded Central New York, he found Indian orchards regularly laid out and producing an abundance of fruit.

Many of our varieties have developed as seedlings from these old orchards. Grafting was early introduced, and whenever a promising fruit was noticed it was quickly disseminated. In this manner have come to us the Baldwin, Rhode Island, Tompkins King, Rome, Hubbardston, Jonathan, Yellow Newtown, Winesap, and many others.

Methods of management have progressed with development of the industry. The settlers planted the fruits about their homes, where, naturally, the trees stood in sod. When the industry became commercialized it seemed to carry over with it the idea that the fruit tree should grow in sod, and that the ground beneath it could be utilized for other crops—an idea which is hard to eradicate. It is generally recognized now that clean culture is best for the fruit.

The fruit farms, which are well cared for, are producing excellent returns. A study of thirty-one such farms by the Department of Farm Practice showed an average net profit on the money invested of about twenty per cent. It is conservative to say that orchards well cared for are netting one hundred to two hundred dollars per acre in New York State. There are many orchards which are netting even more than this amount, and some, in the case of individual years, as high as ten to twelve hundred dollars per acre. Fruit-growing is one of the most promising industries in the East at the present time.
FRUIT GROWING AS A BUSINESS
By M. C. Burritt, M. S. A., '10

Editor of The New York Tribune Farmer

Two factors have always operated to deter many persons from taking up fruit growing as a business and probably will continue to do so for some time to come. These are the comparatively large investment required and the necessarily long waiting period before paying returns can be obtained. Farmers who have not gone into the business of fruit growing because they could not afford this heavy investment or to wait so long for returns have been very wise. Others lacking the necessary capital who have planted heavily have learned to their sorrow the importance of capital in the business both for the original investment and to carry the enterprise.

A German writer, A. Jansen, writing in Fühling's Landwirtschaftliche Zeitung for February, 1910, on "Die Geldfrage beim Obstbaum" (The Cost of an Orchard), has so well stated the proposition that I venture to quote from his article somewhat at length.

"The greatest mistake made by those starting an orchard lies in the fact that few make a correct estimate of the money needed. It is not only the cost of the trees and the cost of the tools, but above all it is the many years of waiting that make such strong inroads upon the capital."

"The burden begins with the setting out of the trees and lasts from 5 to 15 years depending upon the varieties planted. During this time the trees are an expense without giving any profit. In the technical sense one reckons that the burden is relieved from that time when regular net profit is obtained. As I further wish to show, the tree needs a good capital during this waiting period on which interest must of course be paid."
"On account of the irregular harvests there is need of a reserve capital which will tide over two or three bad years. The many who have taken up fruit culture and who have only calculated upon the expense of setting out the orchard, find that after a few years they are unable to meet the increasing expenses. They have to economize and that usually begins at the wrong end, namely, the cultivation of the soil and the combating of diseases and insects. The condition of the orchard goes backward and naturally the anticipated harvest is prolonged."

Investigations made by the writer in 1906 and 1907 under the direction of Professor Warren, which were published in Cornell Bulletin 271, give some indication of the larger capitalization necessary on fruit farms. The 31 fruit farms on which data was secured although they probably did not have to exceed 20 or 25 per cent of their total area in fruit, showed an average total capitalization of $128.95 per acre as compared with $84.53 per acre for general farms and $67.65 per acre on dairy farms. The capital included real estate, machinery and tools, horses, other stock, etc. On fruit farms real estate averaged 84 per cent. of the total capital as compared with 70 per cent. on general farms and 70 per cent. on dairy farms. The average working capital on fruit farms was $21 an acre as compared with $18 an acre for general farms and $20 an acre for dairy farms. On farms entirely devoted to fruit or nearly so, the capital is proportionately still higher.

For several years we have kept rather careful records at "Beechwood Farm," in Monroe County, New York, where we have some twenty acres of non-productive growing orchards. The records have been made in cooperation with the Office of Farm Management of the U. S. Department of Agriculture. While they are not in any way an average, being for one farm only and under its own special conditions, yet they are most interesting because of the general light they throw upon the whole subject.
In a summary of the first eight years of the life of a 6.6 acre apple orchard on this farm, filled one way with plums (a total of about 70 trees per acre), Mr. E. H. Thomson found in tabulating the figures that we had invested in the orchard at the end of the period $124.27 an acre, not counting the value of the land itself (except as we reckoned the interest upon it) or the income lost from other crops which might have been grown had the orchard not been in the way. This involved a total outlay of $35.09 for labor and $89.19 as a cash expense on each acre. In another apple orchard of five acres set 36 by 40 feet with peach trees between the apple trees both ways, we had invested $72.10 an acre at the end of four years, which amounted to nearly 72 cents per tree and $2.86 for each apple tree, about 72 cents a year.

In both these cases only a very small income has as yet been obtained from the trees themselves. They have constituted a cumulative expense which the farm has had to carry. In order to help meet the expense of growing these orchards to profitable bearing one can, of course, resort to interplanting and intercropping. We did both, using plums and peaches for the "fillers" and principally beans as the crop. Although both these means have materially reduced the cost, they have not as yet overcome it entirely. It has been our experience that neither "fillers" nor field crops yield quite as much as can theoretically be expected of them, with a very few exceptions.

In the eight year old orchard we were able to produce a sufficient amount to reduce the cost from $124.27 to $44.55 net per acre. In the four year old orchard the net cost to date is only $9.47 per acre, or 37½ cents a tree, which is not a bad showing. This orchard is likely to clear itself in its fifth year.

The growing of tree fruits, particularly apples, might be called extensive fruit growing as compared with small fruit culture. The more trees or vines one puts upon an acre the larger will be the investment required not only to plant it in the first place but to develop it. It is true that the income may also be larger but the point here is simply that a larger investment is essential in obtaining any income. One must have capital. The period of waiting for returns is, however, considerably reduced with small fruits.

Not only is the investment required to develop an orchard large, but the capital necessary to carry on the ordinary operations and handle the crop likewise amounts to a considerable sum. Our figures at Beechwood farm show that a barrel of apples costs from $1.00 to $1.73 according to the crop, and averages $1.08. This amounts to from $60 to $100 an acre or an average of $75.60 per acre with an annual yield of 70 barrels per acre.

As a business in which to engage when one has plenty of capital, fruit growing is most attractive. It requires constant and intelligent attention for at least eight months in the year, but leaves the other four months open for other enterprises or a vacation. The careful intensive culture required and the constant combat with insects and diseases, keep one alert and active if he would succeed, and demand energy and intelligence above the average. The mental stimulus of this active and exacting business supplies something which some persons find to be lacking in certain types of farming. Because eternal vigilance and quick action in emergencies are the price of success many men will choose the business of fruit growing, and for the same reasons others will keep out of it.

To an active well trained young man, with a love for outdoor life, fruit growing offers opportunity not only to gratify his taste but also to do so with profit.
The apples grown in the colder parts of Canada and the United States come mainly from two sources, namely, Russia and the colder parts of the United States and Canada. The varieties originated in Russia are the survivors of many thousands of seedlings which must have originated in that country since its settlement and are probably the hardest apples of marketable size which exist today. The apples originated in the colder parts of the United States and Canada are likewise the survivors of many seedlings which have grown up since America was settled. The fact that a variety of apple originates in a cold climate does not necessarily make it hardy. It must be able to withstand the severe winters, spring frosts, and summer heat to be hardy. Some of the hardiest apples from the standpoint of winter injury are not suitable for a hot, dry climate, nor for warm climates subject to spring frosts. It is the spring and summer in such cases, not the winter, which determine the suitability of a variety. Many a variety which would have been an acquisition in the North has, no doubt, originated in the South, but not succeeding there, it has never come into prominence. Once a variety has originated which is hardy in the colder parts we may expect the seedlings from it, or the crosses resulting from it and some other variety, to be hardy. If it is crossed with a Siberian crab apple, then at least some of the progeny are likely to be still hardier than the more tender parent. The Russian apples have many of them, doubtless, some blood of the Siberian crab (Pyrus baccata).

The Russian apples, or apples which have sprung from Russian varieties, which are most grown in the colder regions are:

**Summer:**—Yellow Transparent, Lowland Raspberry, Red Astrachan, Montreal Strawberry, Oldenburg, Charlottetown, Red of America, Russian, McMahan, Patten, Wealthy, Alexander, Hibernia.

**Autumn:**—Peach of Montreal, Antonovka, McMahan, Dudley, Patten, Wealthy, Alexander, Hibernia.

**Winter:**—Wolf River, Milwaukee, Pewaukee.

It will be noticed that of this list only three are winter apples, namely, Wolf River, Milwaukee, and Pewaukee. The former of these is a seedling of Alexander, and the two latter are seedlings of Oldenburg, both Russian sorts. Of the rest, which are not pure Russian, the Montreal Strawberry and Peach of Montreal have marked Russian characteristics. Their origin is uncertain and they may be pure Russian. McMahan is a seedling of Alexander, a Russian variety; Dudley is a seedling of Oldenburg; Patten is a seedling of Oldenburg; Wealthy is said to have come from the Cherry crab; Wolf River is a seedling of Alexander, and Milwaukee is a seedling of Oldenburg; Pewaukee is a seedling of Oldenburg. It will thus be seen that practically all of these varieties owe their hardiness to either being pure Russian or to being seedlings of Russian apples.

Of the varieties evidently not from Russian stock, at least in the first generation, are:

**Summer:**—None.

**Autumn:**—St. Lawrence, Langford Beauty.

**Early Winter:**—McIntosh, Fameuse.

**Winter:**—Baxter, Roseau (Canada Red of Ontario), Blue Pearmain, Bethel, Canada Baldwin, Bullock (American Golden Russet), Northwestern Greening, Malinda, Scott Winter.

No hardy summer apples of American ancestry have so far come to the front, though some excellent sorts originated at the Central Experimental Farm, Ottawa, Canada, will soon be
available. The Russian varieties have been so early and such heavy bearers that so far they have taken the lead. The St. Lawrence and Langford Beauty apples are of Canadian origin, and both have marked Fameuse characteristics and must be closely related to it. McIntosh is, undoubtedly, a seedling of Fameuse, and Fameuse itself has shown its hardiness by having existed in the colder parts of Canada for probably 250 years. Some of its seedlings, the McIntosh for instance, are harder than the parent. Of the winter apples, Canada Baldwin is a seedling of Fameuse. Baxter, Roseau, Bethel, and Blue Pearmain are evidently closely related and may be placed in one group. The three former may be all seedlings of the last, as they are much alike. They all originated in the colder regions: Baxter in Eastern Ontario, Bethel in Vermont, and Roseau and Blue Pearmain of unknown origin. To this group could be also added the Stone apple, a Vermont seedling, not much grown but one of the hardiest winter sorts. Northwestern Greening originated in Wisconsin of unknown parents; Malinda in Vermont, also Scott Winter in Vermont. The only apple of all the varieties mentioned which has not been originated in what might be called a cold climate is the Bullock (American Golden Russet), which is thought to have originated in New Jersey, but this is doubtful.

What conclusions must we draw, then, from this list of varieties for the colder regions? Is it merely that certain varieties are adapted to certain climates, or is it that the climate first eliminated the unadapted? When we have decided this question we can select from the progeny of the adapted, or survivors, those which come nearest our ideal for commercial or domestic purposes.

With the excellent material we have to work with in hardy apples of the Fameuse type the writer can in his mind’s eye see varieties with all the good qualities of the McIntosh covering the season from early summer to late winter, and it may be said that apples much resembling McIntosh have already been originated at the Central Experimental Farm, Ottawa, covering most of that period.

The northern limit of successful apple culture in America is not yet known, nor is it likely to be for many years, as severer climatic conditions have to be met, understood, and conquered before success is assured, and this takes time. In the past and in the present, apple culture has advanced northward with civilization, and it is likely to do so in the future. It is not a rash statement to make, considering how far north is the limit of apple culture in Russia, that apples will be grown successfully inland in America as far north as latitude 60°, and that considerably before the end of the present century. What has happened in the past thirty years? Minnesota and Wisconsin have demonstrated that apple growing can be carried on successfully and extensively in those States. In Southern Manitoba quite a number of the hardiest varieties are doing well and yielding profitable crops, and Oldenburg apples have matured in latitude 50° in Manitoba. The northern limit of the Wild Siberian crab (Pyrus baccata) has not yet been determined, and hybrids between this fruit and the apple seem to equal it in hardiness. Fruit of one of these was produced on the Dominion Experimental Station at Fort Vermilion, Alta., latitude 58°, in 1910.

The apple growers of the North will be greater thinkers than those of the South, as greater difficulties will have to be overcome, special methods of pruning and culture adopted, and new varieties produced which will resist the dry and cold winds.

In the province of Quebec apples are grown as far north as latitude 48°, and perhaps further, and in Ontario the culture of this fruit is advancing almost as rapidly as settlement, or as soon as the new conditions are understood. The great commercial orchards, however, do not yet extend
much above latitudes 42° and 45°, from below the City of Quebec, southward through Vermont, and westward to the Great Lakes there is an immense tract of country in which there is enough land suitable for apple growing to produce all of this fruit that would be required to supply the world for many years to come. The capabilities of Nova Scotia to produce fine apples is well known and it has been demonstrated that Prince Edward Island and large areas in New Brunswick can produce fruit of the best quality. The development of apple culture in British Columbia is also working northward. Our friends in the South and West must look to their laurels. In the north, the best wheat is produced and the best cheese and butter, and when the time comes, which in my judgment is not far distant, when apples are as plentiful and deemed as necessary and as high a standard is demanded as for flour, honey, cheese, and butter the North will be able to supply both this world and the old world with fruit of the highest color and best quality.

THE RENOVATION OF NEGLECTED APPLE TREES

By Dr. C. D. Jarvis
Connecticut Agricultural College

The farmers in the northeastern part of the country have suddenly come to realize that the old apple orchard, which in the past has been regarded as a side issue, has great possibilities and that in spite of neglect it is one of the most profitable features of the whole farm system. There has been an attempt, therefore, during the past few years to improve the old orchards and the work of renovation has been an interesting and profitable undertaking. In the following paragraphs I shall not attempt to outline the whole process but to merely call attention to some of the most striking features in connection with the work.

Probably the most conspicuous example of successful renovation is that of Mr. George A. Drew, of Conyers Farm, Greenwich, Conn. Mr. Drew has worked on several orchards varying in age from twenty-five to sixty years. The orchards were very seriously infested with scale and some of the trees were so far gone that the workman on the place inquired of their optimistic employer whether he expected "to bring the dead back to life." One Baldwin orchard in the fourth year after work was commenced, produced an average yield of nine barrels per tree. On the whole, Mr. Drew adopted rational methods of pruning, although in some cases where the trees were especially high-headed and where the trees had become very much weakened, the treatment was quite severe. In some cases the height of the tree was reduced by twenty or thirty feet.

Opinions differ considerably with regard to the details of the work, but there are certain general rules that are usually followed. The primary object in the whole work is to form a new head on the old stump. Some trees are well supplied with water-sprouts from which to develop the new head. If no watersprouts are present their growth must be encouraged and this is best done by severe heading-in.

A common method consists in heading-in some of the branches during one season and treating the remainder in the same way the following year, or even later (see fig. 1). The advocates of this method claim that it lessens the "shock" to the tree and that the tree may continue to bear fruit. In some cases it may be advisable to follow this method but it is probable that trees requiring such severe treatment will stand to have the whole top removed in one season.
bark to heal over the edge, making a permanently tight joint. After sawing the shoulder off squarely around the opening, the hollow cavities, are treated in the same way.

The second year's treatment of the severely pruned or "dehorned" trees is sometimes perplexing, especially when there has been a strong growth of watersprouts during the summer. For fairly vigorous trees it is sometimes advisable to thin out some of these watersprouts during the growing season. Such treatment, as is well known, will tend to reduce the vegetative development during the following season and will further tend to encourage the development of fruit buds. In most cases, however, the trees will not require pruning until they have become dormant. The work at that time consists mainly in the selection of the most desirable watersprouts and the elimination of the others. The selected shoots are usually cut back to about the fourth or fifth bud from the base. The subsequent treatment is much the same as that given young trees. The greatest danger is in leaving too many sprouts, for if the individual sprout has not sufficient room, it will not assume the desirable spreading habit. If the parent branches are undesirable and have not already been removed, they may be sawed off just beyond the selected watersprouts and

![Image of a neglected tree with a central opening and surrounding branches]

1. IF ONE OR MORE OF THE MAIN BRANCHES ARE LEFT TILL THE SECOND OR THIRD SEASON THE "SHOCK" IS NOT SO GREAT.

A second method, and probably the most rational, consists in severely pruning the tree in all its parts and moderately heading-in (see fig. 2). The heading-in occurs chiefly in the central and upper parts of the tree, for it is always desirable to reduce the height of the tree and in this way facilitate the work of spraying and harvesting. All dead and undesirable branches are removed, and all dead stubs sawed off closely.

Some growers spend much time and money in cleaning out, sterilizing, and cementing cavities. From a commercial standpoint it is doubtful whether it would pay to do much of such work, but where only a few trees require this kind of surgical treatment it may be worth while for the sake of conformity in the orchard.

The large wounds are usually protected by painting with either common lead and oil paint or coal-tar. The latter is well-suited to the purpose, but often contains so much creosote that it is likely to injure the bark around the wound. If the pruning is done in the fall the painting is usually left till spring when the wounds have become dry and "checked," in which condition they may be more completely sealed up. For very large wounds it is customary to tack a zinc plate over the surface immediately after painting. The plate is cut slightly smaller than the wound so that it will cover only the woody portion and thus allow the

2. THE MOST RATIONAL METHOD OF RENOVATING A NEGLECTED TREE CONSISTS IN A SEVERE PRUNING AND HEADING IN. OBSERVE THE OPEN CENTER OF THE TREE SHOWN HERE.
the latter encouraged to take their places. After the new head is once formed it is important to keep the tree well opened up to prevent the branches from assuming the long slender habit, so characteristic of neglected trees.

Many people are of the opinion that the pruning work is all there is to the problem of orchard renovation. The orchards that have not been regularly cultivated, will need to have the sod broken up, and for this purpose the common practice is to use the cutaway harrow. This tool will leave the ground in much better condition and will cause less injury to the roots than the plough. Cultivation is usually continued till about August first when a cover-crop is sown.

The fertilizer treatment recommended consists in the use of about 300 pounds of muriate of potash and 600 pounds of basic slag per acre. About 400 pounds of raw ground bone may be substituted for the slag, but where this substitution is made it will usually be necessary to apply lime. It will be seen that no nitrogen is recommended, and it is probable that with the use of nitrogenous cover-crops none will be simply cut at intervals and allowed to remain on the ground.

The ultimate success with renovated orchards will depend largely upon keeping a close watch of the individual trees. The aim should be to maintain a uniform annual growth. The trees that are not making sufficient growth should be encouraged by severe winter pruning, by increased cultivation, and by nitrogenous fertilization. On the other hand, the trees that are making too much growth, and this is often more disastrous than too little, should be checked by summer pruning and by withholding cultivation and nitrogenous fertilization.
REQUISITES FOR SUCCESS IN ORCHARDING

By Edward VanAlstyne
Kinderhook, N. Y.

THE MAN

The man of the right type will make more of a success of an orchard on rather uncongenial soil, climate and location than will the man not thoroughly orchard-minded, under most favorable conditions. Too many are inoculated by the bacteria of orcharding who have an idea that all that is necessary is to buy orchard land, set it out with a great number and variety of trees, say to them metaphorically at least, "God bless you" and in five or six years, sit down under their shadows in great delight and count up the proceeds. They forget that it will cost about $40.00 per acre for the use of the land and care of the trees until they come into full fruitage. This does not take into account the cost of the trees. It will probably be eight or ten years before any substantial increase will be obtained from the orchard. Disaster stares the man in the face who has not the wherewithal to maintain himself during the interval of setting and profitable fruiting, or who sets so many trees that his land will not yield enough income to pay expenses while he waits, particularly if he expects to spend his time in sport and social duties. A man who expects to obtain a good income from his trees later on, must be willing to pay the price of intelligent painstaking care without reward for at least a decade. He must be willing to labour and to wait.

Given such a man in an orchard section, I know of no other industry which promises more, as long as he does not put out more trees than he can eventually take care of, which is a present day tendency. The most profitable orchards of the future will be those of medium size of a few standard varieties well cared for in every particular.

THE LAND AND LOCATION

The land may be ever so good but if it is located too far from market, or in a section isolated from other orchards or where the proper amount and quality of labour cannot be secured, it may be a failure.

As a rule the naturally well drained lands, in somewhat elevated locations, are best. There they get a better circulation of air and consequently, are less liable to injury by pests and fungus troubles. As a rule the cod-lin-moths are not so injurious in the higher altitudes where the night temperatures are low. No orchard should be set on land too steep to pass over with a sprayer, no matter how desirable the field may be in other ways.

It is important that one should distinguish between varieties of high commercial value and those of high quality but not profitable as market sorts because of weak growth or small bearing surface. Also that only varieties suited to the particular soil and climate where the orchard is should be set, as well as known and wanted varieties in the markets most accessible. It is the height of folly to set, except experimentally, varieties having great merit in another locality but never having been tried elsewhere, particularly as there are enough climatable varieties which have been tried out. The country is full of orchards just coming into bearing in which are whole blocks of trees which must be grafted to make them profitable because the owner was beguiled into setting out varieties not suited to his location. It is always unwise for anyone coming into a community to ignore entirely its established customs and varieties. Both are likely to be founded on substantial grounds.

It is very important that the prospective orchardist should not be carried away by the fairy tales, too often heard as to the enormous wealth which will accrue to the apple grower. Statements such as this: "a man in Delaware sells enough net to buy an automobile from each acre of his orchard, annually" which recently I
saw in what should have been a respectable publication, and others equally wide of the mark are deceptive. Neither is it fair to take the income of some successful orchardist whose trees are in full bearing in one of the recent years of high prices after he has spent a decade or two in bringing the orchard up to that point and take that as a fair criterion. Doubtless $100.00 is a good average annual income from an acre of bearing orchard. This means $1000.00 from ten acres. It will usually be wiser to purchase a farm with a bearing orchard in it at two or three times the price rather than one in which the orchard has to be set and grown. In the first instance, one has an income from the start which will warrant the increase in price paid. When one has to establish an orchard, the cost of the trees and the care of them as well as the use of the land must be added to the purchase price. Often the latter will be more than the former. Then too, “hope deferred maketh the heart sick.”

REFLECTIONS ABOUT APPLES

By Dr. J. P. Stewart

Experimental Pomologist, Pennsylvania Experiment Station (From the Penn State Farmer, with Slight Modifications by the Author)

IT probably has not occurred, even to the average apple enthusiast, that he is lending encouragement to one of America’s great industries. Not great; perhaps as compared with our enormous corn industry, with its billion-and-a half dollar crops annually but, as compared with other fruits, and in its health-giving and life-cheering qualities generally, the American apple is truly great.

Just what the annual value of the apple crop is, it is difficult to estimate. As indicated by the census of 1900,—the latest available,—its value in 1899 was between fifty and sixty million dollars. This is farm value of the supply noted by the census takers. The retail value was doubtless at least twice as great. During that same year, the total value assigned to all fruits, including tree fruits, grapes, small fruits, citrus and other subtropical fruits, was slightly over $131,000,000. The value of the apple crop, therefore, was nearly as great as that of all other fruits combined. As compared with the total of all other deciduous tree fruits,—namely pears, apricots, cherries, peaches, nectarines, plums and prunes,—there were in 1900, over a third more apple trees of bearing age and nearly six times as many bushels of fruit.

During the decade just past, moreover, the interest in the apple has greatly increased. This is indicated by the great “booms” and high values of apple land in the far West and by the extensive commercial developments, under skilled direction, that are now coming on in the East and in many of the central states.

An interesting side-light upon this development appears in the fact that tree-planting seems to be increasing much faster than fruit production. Thus, between 1890 and 1900, the census shows that there was an increase in the number of bearing trees of about 67.9%, while the increase in yield was only 22.5%, a difference of 3 to 1 in favor of the former. This lagging behind on the part of production is also very noticeable in the annual crop estimates of the American Agriculturist and in those of commercial organizations.

The causes for this condition are various. Increase in enemies and diseases, poor or ill-adapted varieties, the use of less suitable land, the entrance into the business of people not so well adapted to it, and probably not infrequently, the waning fertility of orchards formerly productive,—these are some of the factors that doubtless have an influence in keeping down the figures on production.

It is to the fertility factor, however, that we wish to call special attention. This is desirable, first, because we still
have people who doubt the value of fertilizer in any orchard, and, second, because there are others who go to the opposite extreme and assume its value in all cases. Either attitude is likely to prove costly to its possessor. After five years of work and experiments upon this point, we have come essentially to the following view. In some orchards, fertilization of the soil is the thing most needed. In them, it is essentially the key to the situation. In others, fertilizers may be applied at a loss.

In support of this view, we may cite certain orchards that we have under experiment, in which fertilizer applications practically uniformly result in well loaded trees, while there is little or no fruit of any consequence upon the checks, the latter differing only in the absence of fertilization. In such orchards the gains from fertilization have run as high as 4 to 17 times the amount of fruit produced on the checks and have resulted in net profits of $120 to $420 per acre, even when the fruit is estimated at the low value of 50 cents per bushel. We have observed similar, though less marked results, from proper fertilization by commercial orchardists, over a wide range of territory. It is also reasonable to expect such responses, in view of the fact that the total plant food draft of a vigorous bearing orchard is really quite heavy,—more per acre for every constituent than is required by a 25-bushel crop of wheat,—and it is only because of certain special abilities and characteristics that trees are frequently able to maintain themselves for so long without some outside assist-

THE ROW ON THE LEFT HAS RECEIVED NO FERTILIZER; THAT ON THE RIGHT HAS RECEIVED NITROGEN AND PHOSPHATE. THE NET INCREASE ON THE LATTER WAS $267 PER ACRE.

...
inadvisable for anyone to make heavy and extensive applications of fertilizers in any case, until after the applications have been made to a few typical trees and have been proved successful. Sufficient time should be allowed before judging the results, and the character of the fertilizer and the time of application should be right.

On these points, we would say that results should hardly be expected before the season following the application, owing to the fact that fruit-bud formation occurs in the latter part of the season preceding blossoming. In character, the fertilizer should be a complete one unless it is definitely known that some one or more of the elements are already present and available in the soil in sufficient amounts or can be furnished in some other way. The fertilizer that we are recommending for bearing orchards is one carrying about 30 pounds of actual nitrogen, 50 pounds of actual P₂O₅, and 25 to 50 lb. K₂O per acre. Stable manure, of course, is also recommended, if available, at a rate of about 8 to 10 tons per acre. When plant food is really needed in an orchard, we have found that it is generally immaterial whether it be applied in the form of manure or commercial fertilizers, so long as all the necessary elements are added. The time for application of soluble fertilizers, like the nitrates, is probably best somewhat after petal-fall and not later than July 1. The phosphates and potash can probably be safely applied at any time, and hence it may well be done at the same time as the nitrates. Stable manure may be satisfactorily applied any time, except possibly late summer and early fall before the leaves are off.

The reasons for the variations in effect of fertilizers are of great interest and importance. These we are studying especially at the present time. In those cases, where the applications merely show no important effect, we have assumed that the activities of the trees are being controlled or limited by other factors than plant food. In such cases, the obvious procedure is to
determine, if possible, what the limiters are, and to correct them before wasting money and energy on factors already relatively favorable. Among these other possible limiters many may be cited, such as frosty locations, poor pollination, inherent sterility, insects, diseases, too much or too little moisture, improper pruning or bad care in other respects. It should be remembered that it is the unfavorable factors that primarily determine the crop, and that it is only with a properly balanced treatment of all factors or conditions that truly successful and economic production is possible.

In the cases where actual harm has resulted, apparently from fertilizer applications, the reasons for it are not entirely clear. The injury appears, however, to be connected with a toxic action, which is known to be exerted by many salts of the heavier metals when they occur alone in a nutrient solution or are distinctly dominant in a solution otherwise weak. This action is, therefore, most likely to result from heavy applications of muriate of potash, nitrate of soda, ammonium sulfate, and possibly from soluble metallic salts formed in acid phosphates. It is quite possible that the existence of this toxic action is largely responsible for the current preference, in many places, for organic carriers of the various fertilizer elements. In our observations, the injury has been confined greatly, though not entirely, to muriate of potash applications, especially on relatively thin soils. Two years ago, we thought that the harmful agent was probably the chlorine accumulating from the applications of muriate. At present, however, we have quite clear evidence that the real toxic agent is the basic potassium ion, and that the action of the chlorine is only indirect and consists essentially in making the potassium more soluble. Similar effects can be obtained with the sulfate, only it takes more of it.

This point and the various observations of injury are treated rather fully in our annual report for the past year. In the present space, it is sufficient merely to say that the possibility of fertilizer injury makes it distinctly unadvisable to place any considerable amount of fertilizer in the holes at planting time or to apply it too closely about young trees, even as a top dressing, materials rich in soluble potash being especially dangerous. Young trees, moreover, are less likely to profit from fertilization than old ones, though trials should be made even with them, as we have some instances where relatively young trees are responding well. In such cases, a good mulch of stable manure, if available, is probably safest and best.

It should also be stated that, if our present toxic hypothesis is correct, muriate of potash is just as useful in the fertilization of apple trees or other fruits as any other form, and its lower price and greater solubility make it really preferable. Instead of changing to the sulfate or to wood ashes as the carrier, merely less of the muriate can be used, and if there is still danger of injury, it can doubtless be entirely removed by a heavy dressing of lime or of ground limestone. This means of neutralizing fertilizer injury is of special importance. Physiologically, lime is well known to be one of the most efficient neutralizers of the toxic action of bases, and our field experiments thus far clearly bear this out. It is quite possible, too, that some of the indifferent results that have been obtained from orchard fertilization in the past are connected with this toxic action of some of the mineral elements applied. At any rate, wherever fertilizers show uncertain or distinctly unfavorable action, it will be well to add lime to the soil before definitely concluding that fertilization is of no avail. If then their action is still insufficient to show a profit, it is probable that other factors are limiting the crops, and attention should be given to them until a balanced condition is attained, when fertilization may again prove satisfactory and profitable.
THE SUCCESSFUL WOMAN IN THE COUNTRY
By Frances E. Wheeler
Chazy, N. Y.

VERY many times has the Mistress of “Clovernook” thought of the fine women students of our Cornell Agricultural College, with whom two years ago, she had the pleasure of talking concerning rural life for women. Very many times has she wished that she could know if her words were of any help and if these women are prospering in their work. Now, through the pages of the Cornell Countryman, I have the opportunity to speak on the problem of self-support for women in outdoor work.

Of course, self-support (which certainly includes some extra pennies—enough to make comfortable the days of folded hands) is a very serious matter for a woman to undertake. The measure of her success must greatly depend on her wise choice of the kind of work adapted to her individuality, the amount of common sense, faithful thoroughness, and perseverance which she has in stock, or can develop.

My own trail was blazed for me which in many ways was fortunate. It saves a mistaken choice of environment and leaves sufficient margin for development. From experience gleaned from about 17 years of self-supporting rural life, I am convinced that it is not so much what one does as how one does it; not so much where one begins, as how one begins.

While I realize that there are women who are successful specialists in various agricultural lines, I still believe that for the average woman, a small farm and a variety of interests in the long run, most satisfactory.

At “Clovernook” we have only about an acre and a half of land but our turkeys have a grand range over farms adjoining ours. The other fowls have this range also although they are kept partially yarded most of the time. As only about a third of this land is available for agricultural purposes it would seem to many somewhat amusing to expect to obtain even a hand-to-mouth living from so small an acreage, yet anyone who saw the place seventeen years ago would realize very keenly how many hundred of dollars in surplus earnings must have gone back into the property to bring it up to its present thrifty condition and comfort.

All through these seventeen years “One hand has washed the other” to speak figuratively. The poultry, especially ducks, have enriched the impoverished land, enabling the production of big crops of currants and strawberries. We have raised and marketed in one season on less than a quarter of an acre two thousand ducks. We have propagated from the cuttings of twelve currant bushes, some five hundred plants. These, on about an eighth of an acre, yield a crop of 1000 lbs. of fruit per season. We have produced in a bed 30 by 40 ft. in size, 100 lbs. of strawberries and from our 200 plants have sold $30 worth and set out a bed of 1000 plants for ourselves.

The fact that mother and I live alone has necessitated the employment of hired help very extensively in the cultivation of small fruits, in keeping the place in order, and especially during the years of duck rearing.
When these fowls ceased to be profitable, owing to several reasons, the market branch of the business was dropped and a limited number of stock for first class breeders was substituted. In fact, we have had to confine ourselves to a line of breeders producing poultry and eggs, in all the poultry branches, owing to inability to give the other side the necessary personal attention.

The "Clovernook" apiary is what brought in our first pennies and has always been an income and a help in developing the other branches of usefulness.

I trust the readers will pardon this personal digression for I simply wish to illustrate what can be done with a very small farm, when the disadvantages of a northern climate near Montreal and distant markets must be met.

The special advantages to a woman on a small place are: that she can do so much of the work herself since it is not of a nature which is hard for a woman and that there is variety and never flagging interest.

It is true when fall comes, plans are made for warm winter housing and the egg problem mounts up, the egg problem grows more difficult of a happy solution. Then it is a great comfort to see our plants tucked snugly beneath their winter blankets of straw and snow and our bees contentedly hibernating in the cellar. It is also a great comfort to know that we need have no further care for those branches until spring. In fact, we can go off for a long vacation, a trip to Europe if we like, and no harm will come to them. But, "home for chores," grows extremely monotonous as time wears on and who of us would not take such a rest if we could?

Many have asked me, "What part of your work do you like best and which is most profitable?"

Unquestionably, in proportion to the time and money invested, my bees are most profitable and are most satisfactory. For these reasons they are most enjoyable. Next to them are the White Holland Turkeys.

The initial outlay of an apiary is very small and the outfit is a light one. It may be enlarged very cheaply. The fact that the food costs nothing is a great item and that it will be gathered freely in any locality where man or beast can live is another. I had 64 colonies one year and 32 of them harvested five tons of honey.

The advantages of bee keeping are many. Ten by fourteen feet will hold ten colonies which will produce from 50 to 300 lbs. of honey each and require only a couple of hours' work once in about every ten days during the blossoming season. They are intensely interesting little creatures and are not hard to manipulate nor to understand how to manage.

GAS ENGINES NOW SUPPLANT STEAM

By C. F. Hirshfield
Professor of Power Engineering, Cornell University

THAT the modern gas engine is superior under all conditions to the once all important steam engine was the purport of Professor C. F. Hirshfield's lecture on "Gas Power" before the Sigma Xi Society in Rockefeller Hall.

"In efficiency, variety of application, simplicity of structure, and portability, the modern gas engine is superior to the steam engine. The internal combustion gas engine also decreases the danger from fire, always present in the use of the steam engine with its external combustion.

"The effect of the gas engine upon agriculture has most interesting economic aspects. Agriculture is undoubtedly the backbone of human endeavors. Cities, manufacturing industries and artificial products of civilization rest on the foundation of agriculture, and
anything that improves agriculture, influences civilization, and is a noble consideration.

"The return from one unit of agricultural economic work is approximately fixed and the only way for the farmer to increase his income is to handle more units. This can readily be done by power machinery but gas has shown itself to be the only satisfactory driving power. Steam is too costly, too absorbing and too dangerous.

"Take for example the plowing of one man's land. More power is expended annually in plowing than in all other departments of human endeavor combined. It takes one man and two horses five hours to plow one acre of ground, and a man walks a distance of 5,000 miles in plowing one square mile of land. As the period for preparation of the soil is limited, the extent of the work that can be done is simply a matter of the number of workers employed upon the ground. Horses can work only at a limited speed which varies with the weather, soil and other conditions. A gas tractor can haul from four to twenty plows at an even greater rate of speed than can the horse, can work 24 hours a day if necessary, and can be operated by one person without fatigue.

"Again, milking and skimming, transporting and churning milk can be accomplished faster, and easier by means of gas power. Possibilities also in the form of running water and sewerage systems, electric light plants, etc., are opened to small communities by the gas engine."

FOR BETTER GRADING AND PACKING OF EASTERN APPLES

By H. B. Knapp, '12

[Delivered before the New York State Fruit Growers' Association at Rochester on Jan. 4th, 1912. This speech was awarded first prize in the contest in which there were five students of the College entered.]

WE ALL admire the splendid fruit with which the western growers have invaded our markets, fruit which has often put the product of our eastern orchards to shame. We admire it for its beauty, its size, its uniformity, and the attractiveness with which it is packed, we also not only admire, but envy the price which it brings. We have heard so much about the opportunities for the fruit industry in the West, so many almost marvelous reports of the remarkable productiveness and quick maturity attained in that western clime, that the advantages of our own State in this special field of agriculture seem by comparison to sink into obscurity.

It seems to me, however, that when we take up one by one and consider carefully the natural factors which go far toward making the business of fruit-growing a success or failure that we find that we must look further and deeper; that we of the East cannot put the responsibility or blame for our secondary position in the realm of modern orchard management upon natural advantages, or disadvantages. In fact, such a consideration makes our present position seem still more open to condemnation.

The three factors which will, other things being equal, shape the map of our country in which fruit can be grown successfully on a commercial scale are: climate, soils, and markets.

The point of greatest importance in regard to climate, eliminating the points of liability to frost at blossoming time, of winter injury, and of sunscald, factors which certainly do not favor the western grower, is the supply of moisture during the growing season. When we stop to consider that the thing which a young and growing tree needs above all things is water, and when we consider that a crop of fruit
is from 85–90 per cent. water, then we realize that the question of moisture supply is an all-important one.

The famous Hood River Valley of Oregon has during the six growing months seventeen inches of rainfall, the Rogue River Valley at Medford, Oregon, has six inches, the Wenatchee Valley of Washington has six inches, and the Yakima Valley, in the same state has three inches. These are, with one exception, twenty year averages. More than this, one-half of the amounts given fall in the respective regions during the first two of the growing months. After that the dry season is on in earnest and the rains for the next three months do not amount to much more than our dews in New York.

Geneva, in Ontario County, has nineteen inches of rainfall during the growing season, Rose, in Wayne County, has nearly twenty inches, and Rochester, in Monroe County, has almost the same amount. Moreover, the extent of the rainfall from month to month varies barely an inch throughout the season in any of these sections. Then when we further consider that with ordinary methods of conservation, eighteen inches of rainfall, distributed as evenly as it is in this state is none too much for the best results, we begin to understand why the westerner tills his orchard from fifteen to twenty times a season, and why he is such an ardent advocate of irrigation. He is because he has to be. Such operations cost money, and you do not see these things dwelt upon in the profusely illustrated prospectuses sent out by these western sections.

It is only fair to state that the westerner can put on his fruit an intangible something which gives it a little better color and higher finish than we can obtain here. I think all of us will concede this, but when we have said this, we have said all there is to say in favor of western climatic conditions.

It is hardly necessary to take up the factor of soils. With our present knowledge of the types of soils best suited to fruit production, a single glance at the soil map of New York State, as compared with those of her western rivals, will convince us that we can never more closely approximate ideal soil conditions and on so large a scale than we can in the Empire State. New York leads all other states in the variety and number of crops grown, because of the great variety and productivity of her soils. A westerner smiles unbelievingly when you tell him that five towns in western New York ship more apples than the states of Oregon and Washington combined.

The output of the West and Northwest in 1910 was from twenty to twenty-five thousand carloads of apples, the output of the eastern states was one hundred fifty to one hundred sixty thousand carloads, of which New York produced the major portion. It is not that western soil conditions are not good, but that eastern soil conditions are better—and there are a lot more of them.

When it comes to the third factor in fruit-growing markets, we have the westerners at our mercy. The great bulk of their fruit comes clear across the continent at considerable expense for expressage and refrigeration to be sold in eastern markets at our very doors. It costs fifty cents to ship a box east. With the best of train service fruit sent from Oregon cannot be sold in Chicago before the morning of the eighth day, in New York City before the morning of the eleventh day and in Boston before the morning of the twelfth day. What a disadvantage we would consider it if we had to face such a proposition.

Clearly it is not the East that is suffering from natural obstacles. I should like to offer this statement of Dean Bailey's. He says: "I have visited the splendid Hood River Valley of Oregon, with its remarkable productivity and wonderful possibilities; I have traversed every great fruit-growing section of the Golden West, and nowhere have I found one to compare with the Ontario Lake Region of New York State."
And so it seems to me that we must look still further if we are to discover the true cause of western success, I might almost say supremacy, in the realm of fruit production.

The secret of this success, in my opinion, lies in the superior grading and packing done by the western man. For this he does not deserve so much credit as might at first be supposed. As with frequent tillage and irrigation, he grades and packs as he does because he simply has to. His great distance from market and high transportation charges force him to eliminate his poor and undersized fruit because it does not pay to ship it, and the type of package which he has found most suitable, the bushel box, does not permit of more than a slight variation in size of fruit in any one package. The western man has graded better because he could do nothing else and live. We will grade just as well when we have to, but I hope we shall begin before that time comes. It will be more to our credit morally and financially if we do so.

Now, the box in eastern orchards is a comparatively new and untried thing, and I presume you are expecting me, as a college man, to enthusiastically advocate its adoption as a remedy for the defects in eastern orchard management because one of the chief attributes with which a college man is popularly endowed is a desire for something different, something new. I am not going to do any such thing. I consider that there is not of necessity any conflict between the barrel and the box, each has its own sphere and its own limitations, and personally, I consider the sphere of the box much narrower and its limitations much greater than those of the barrel. Moreover, under ordinary conditions, I believe it to be folly to attempt to compete with the westerner in a project in which he has such a lead, and in which he is doing so well. I do think that a comparison may well be made between western grading and eastern grading, and with the prospects of a great increase in fruit supply in the future, it seems to me that it would be well to consider this possibility at once.

Mr. J. A. Cohill, manager of the seven hundred acre orchard of Tonoloway Orchard Company of Hancock, Maryland says:

"The value of accurate grading of fruit to a uniform size and appearance is the selling factor of any package be it a barrel or a box," and it seems to me that this is the lesson, first of all which we should learn from our western friends.

But you say that the western man obtains often from eighty-five to ninety per cent. first class fruit while eastern fruit will not as a rule run as high as forty per cent. first class, or fancy. We must then obtain the fruit to grade before we can accomplish much in a practical way.

The success of the western man in this respect is not due to absence of insect pests and plant diseases, for he has plenty; it may in some measure be due to his more intensive methods of spraying and cultivation, but it is in my opinion chiefly due to thorough and systematic thinning of his fruit. It pays him to thin; he knows it and we know it; why will it not pay us? When we leave four Baldwins in a cluster on a heavily loaded tree, so loaded and borne down that the under branches do not get a ray of sunlight, we cannot in reason expect that the apples in that cluster will develop as they should, or that the product of the entire tree will be of more than indifferent value.

When an industry has reached such a stage in its development as the apple industry has reached, when everyone knows how to grow fruit of some sort and competition is keen, then it is as true as with any other industry, quantity must give place to quality and the article which you produce will not be valued according to its bulk, but according to its merits, to its points of superiority over the article produced by your competitor. This has always been true and it is none the less true to-day.
It has already been demonstrated that thinning is a practical operation. Mr. T. D. Whitney, of Stanley, says that last season he thinned eighty per cent. of his 173 Baldwin trees and nearly all of his 70 Rhode Island Greening trees. He barreled 964 barrels of Greenings, 734 barrels of which were No. 1 and fancy, 2½ inches or over in diameter and 230 barrels were No. 2 grading 2¼ inches in diameter. He says he thinks his first grade Baldwins were increased twenty-five per cent and his Greenings around ten per cent. The wide range in prices even at the present time he attributes in large measure to the difference in size of fruit. He says large apples can be picked ten to twenty per cent cheaper and packed fifteen to thirty per cent cheaper. His picking last season cost him less than ten cents a barrel and his packing less than nine cents per barrel, help working by the day. He is convinced that by thinning he gets a much larger per cent of first grade fruit and each succeeding year seems to add to the premium on large fruit. He remarks very truthfully that as one thins his fruit he gets more interested in the growing crop which leads to better care in spraying and cultivation.

Mr. Lloyd S. Tenny, of Hilton, is another ardent advocate of thinning. He says it can be done for five cents per barrel, a man thinning four trees yielding six to eight barrels per tree in a day, and that he can obtain twenty-five cents more per barrel for his fruit on the trees. He says further, that he can keep his gang of men employed through the summer and thus is equipped with help when the picking season opens. The danger of breaking is also lessened and the vitality of the tree is not so severely sapped as to impair its future usefulness.

When practical men come out and openly advocate such a policy, is it not time to consider that it has passed from the realm of theory and is worthy of a fair trial? Of the men I know who have done this, I do not know of one who has failed to keep it up.

And so, gentlemen, I believe I am justified in saying that we should thin our fruit in order to obtain what we need above all things, a better and more uniform product.

But let us in the meantime put up an honest pack, as good in the middle as it is on the ends. Much has been said about the poor apples in the center of the eastern barrel, perhaps too much has been said, but this you know is in many cases true, that the smaller apples work down through their larger companions until they get to the middle of the barrel, and, this is the strangest part of all, in opposition to whatever law they were previously obeying, they elect to stay in the middle of the barrel. I would eliminate this tendency and avoid this temptation by doing away with the small apples.

We, at present, have an apple law which is good as far as it goes, but I believe we should have one similar to the one in force in Canada, requiring the name of the packer on every barrel of fruit, or if it is repacked, the name of the person, or firm, who does it.

In this way, and in this way only, it seems to me can we put our hand on the evil itself and deal with it accordingly. I should like to see this Association before its adjournment appoint a committee to consider this matter and to prepare a set of resolutions concerning it to be presented at the next session of our legislature.

And let us always remember that we are in the best place in the world to grow fruit, that if we fail here it cannot be attributed to natural factors, but to our own shortcomings. When we care for our orchards as the westerners care for theirs, thin our fruit as they thin it, grade it as they grade it, and pack it as carefully as they pack theirs, then the splendors of the Hood River Valley and other sections of the West will no longer be enumerated as typical of the fruit production of this country of ours, but with pride we can point to the orchards, dotting our own hills and valleys, and say with entire truth "these are unsurpassed."
THE CONTROL OF THE PEAR PSYLLA BY SPRAYING FOR FLIES, EGGS AND NYMPHS

By H. E. Hodgkiss
Assistant Entomologist, New York Agricultural Experiment Station, Geneva, N. Y.

THE pear has fewer insect enemies than most kinds of fruit. Among the species that attack the pear, the psylla has attained preeminence. Fruit growers, generally, believe that it rivals the San José scale in destructiveness, and that during years of its superabundance it is a more difficult pest to combat. Some orchards are annually threatened with injurious numbers of this insect, while in recent years the period of 1909-1911 is notable for a widespread invasion of the pear orchards of western New York. The losses occasioned in 1910 aroused the pear growers to the importance of the psylla, and has provoked as never before a demand for information for efficient methods of control.

The injuries from the pear psylla are caused by the extraction of plant juices by the nymphs which feed upon the leaves and fruits. During May and June when the trees should be making the best growth the first brood of psyllas is developing. The continual sapping of the plant juices of the leaves and from the bases of the newly-forming buds by the insects causes a marked retardation in growth, with a subsequent dropping of the foliage and the arresting of the development of the fruit buds for the succeeding year. The trees sustaining such injuries are very susceptible to winter killing, to which many often succumb.

The time during which control measures can be successfully practiced against the first brood is limited to the period which includes the life events of the swelling of the buds and the dropping of the blossoms. Doubtless failures to check the ravages of the psylla in past years have been largely due to the meager information which has been available concerning the habits of the pest. Nearly all of our insects have one or more vulnerable stages in their life history, and it was believed that a study of the life cycle of this species, especially of the first brood, would provide a sufficient knowledge of the habits and seasonal history to determine the period during which certain practices could be profitably used to supplement present methods of control.

The abundance of the psylla during the past two years afforded an ample opportunity to watch the activities of the first brood of the insects. In 1910, the adults or "flies" which pass the
Activities of the First Brood of Psylla and Condition of Trees During 1910 and 1911

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<th>Date</th>
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<td>Flies most numerous</td>
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<td>Most eggs, ice storm driven flies under bark</td>
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<td>Eggs hatching</td>
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<td>Few nymphs</td>
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<td>Nymphs dying from rains and cold</td>
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winter principally beneath the loose bark of the trees, emerged on March 26 and the deposition of eggs commenced on April 2. The season of 1911 was somewhat less advanced; the final emergence of the flies took place on April 6 and the first oviposition occurred April 14. A similar although less sharply defined period is noticeable between the egg and nymphal stages. The nymphs were first observed respectively on April 19, 1910, and May 2, 1911. The divergence in the dates of appearance of the several stages of the first brood of the psylla during these years is attributable to prevailing weather conditions. But with the maturing of the blossoms the nymphs were each year in the fourth stage. An intermingling of the flies, eggs and nymphs occurred to some extent, which was thought to be inconsiderable. The accompanying table, which is based on observations in orchards during 1910 and 1911, shows the occurrence of the first brood of psylla with respect to the conditions of growth of the trees.

On the basis of these observations it was deemed practicable to spray for the psylla in one or all of the three stages. This idea was followed in some forty orchards throughout the pear-growing districts of the state. The operations were undertaken by each orchardist with his usual equipment

and, while the applications were made under direction, the work accomplished is an indication of what may be expected if the operations are conducted carefully.

The first stage of the operations was directed upon the hibernating flies. The miscible oils, oil emulsions, soap and a nicotine preparation were used for this purpose. One of the interesting results gained by this experience was that in some orchards in which the bark was removed the psylla was entirely controlled by this application, while for the most part in unscraped orchards a sufficient number of the flies remained to render a second spraying advisable. It was also found necessary to spray each tree separately. The usual practice of spraying all the trees on one side and returning through the orchard on the opposite side was demonstrated to be impracticable because of the habit of the species of seeking protection on the sheltered portion of the tree.

The orchards in which control of the pest had not been successfully attained by the first spraying to kill the flies were then sprayed with the lime-sulphur wash at winter strength to kill the eggs. This treatment was made during the last week in April and the first week of May, at which time the buds were compact in the cluster. The result of this application was an
almost complete eradication of the insect in most of the orchards. Some eggs which were subsequently laid upon the trees hatched, but the numbers of the nymphs were so small that spraying for these was deemed unnecessary; and in no instance did the natural increase of the insect cause noticeable injuries during the remainder of the season.

Only a few plantings required a third treatment, but some orchardists desired to remove all chance of further damage and made a third treatment to kill the newly-hatched nymphs. Some pear-growers were unable to make the applications against the flies and the eggs, so these men sprayed for the nymphs. This gave an opportunity to compare the results of the spraying in orchards in which the entire plan was practised with the results obtained from a single treatment for the larval stages. The usual contact sprays were employed for this purpose, and were applied soon after the blossoms dropped. The results of this treatment were very gratifying and, even in those orchards which had not been previously sprayed, the infestation was destroyed. None of the trees required further treatment, and they put forth a vigorous growth during the balance of the season.

The chief factors for the successful control of the psylla are: (1) an acquaintance with the appearance of the individual stages of the first brood, the flies, eggs and nymphs; (2) a familiarity with the development of the psylla in relation to the growth of the buds of the tree; (3) thoroughness in making the applications.

A knowledge of the time periods in which the condition of the trees with respect to the growth of the buds will indicate the stage of the insect at that particular period, is an invaluable asset to the orchardist. The manner in which the sprays are applied should receive particular attention. Many failures attributed to the insecticide would be avoided if more attention were given to the manner in which the applications were made.

Pear-growers as a rule have become more hopeful for the control of the psylla, and many orchardists have gained an added interest in pear-growing since it has been demonstrated to their satisfaction that by systematic spraying against the first brood the pear psylla can be relegated to a comparatively unimportant place among orchard pests.

FRUIT GROWING IN OREGON

By C. I. Lewis, M.S.A, '05

Chief, Division of Horticulture, Oregon Agricultural College and Experiment Station

OREGON is a state which contains many extremes of natural conditions. For instance, the rainfall varies from one hundred thirty inches to as low as two inches. There are regions where frost is hardly ever known whereas some sections have very severe winters. In some locations the summer heat is never very intense while in others it reaches a high degree. The elevation varies from sea level to snow line and the soil is from heavy adobe to the lightest silt and sand. Eventually we will probably find that with these extreme conditions there will be very few varieties of deciduous fruits but will succeed in some parts of the state. Eastern men in writing of the Pacific Coast conditions generally admit that we have the color, size, and attractive appearance of fruits but that we do not have the quality. Such statements are misleading, and eastern horticulturists should not preach this gospel among their fruit growers for they are simply chasing the rainbow. Probably no one section in the United States can grow all varieties superior to any other section. Varieties to be grown at their best must find their special requirements fulfilled. I am collecting
each year apples from all over the United States and find that no one region is superior to all others for all varieties. Experience has shown that in some sections of the state a certain variety will not grow; the quality will not develop under the climatic and soil conditions found, but in other sections the variety will grow to a superb degree of quality. As a rule such varieties as the Baldwin, Northern Spy and Rhode Island Greening do not have as much quality with us as in some other sections of the country, but who ever has seen the Wenatchee Winesap, the Hood River Spitzenberg, the Willamette plums, prunes, and cherries, and then say these fruits do not have quality are either crazy or prejudiced.

The real elements of success in Oregon fruit growing are due, first to very productive soil, and second to very favorable climatic conditions, which taken together produce fruit of remarkable size, high degree of color, relatively free from blemishes, and produce the fruit in large quantities. Under these conditions trees come into bearing at an early age and in many cases are apt to bear regularly. Nature has been kind to the Pacific Coast in giving them ideal conditions for producing high class fruit, and coupled with what nature has done the fruit growers have done their part. The most intensive methods of cultivation, pruning, thinning, spraying, etc., are practiced. Growers are eager to find new methods they can use that will improve the quality or yield of their trees. Progressive methods are used in handling the crop. Pruning, packing, precooling, and shipping, are all given careful attention. No section of the country that I have ever visited practices such careful methods in preparing the fruit for the market as does our own state of Oregon. Business methods play an enormous part in our success in fruit growing. First, as regards selling, our system of organizing and finding the right markets has produced most excellent results; not only the business methods used in preparing and selling the fruit but also in growing it. The cause of the adoption of such progressive and such good sound business methods in conducting our fruit growing is the personal element. Perhaps there is no other line of agriculture in which the personal element plays such an important part as does fruit growing. Our fruit growers as a whole are wide awake, brainy men; many of them are men with a great deal of business training and executive ability; men of big ideas and optimism. They believe in their country and are not afraid to spend money when they can see the expenditure is going to bring results. The result of such characteristics means carefully handled orchards and splendid type of homes. In fact, the whole atmosphere surrounding fruit growing is an attractive one. Each valley has its University Club with members from such institutions as Harvard, Yale, Columbia, Cornell, Chicago, Wisconsin, etc. Above all, these men thoroughly enjoy outdoor life. They are enthusiastic over their business and are men who love agriculture. Is it any wonder then that with our soil, our climate, and with such a class of men conducting our fruit industry that success becomes our byword and failure is not recognized in our vocabulary?
NEW YORK STATE FRUIT GROWERS' CONVENTION

By Dudley Alleman, '14

The astonishing increase of interest shown in Horticulture was typified by the eleventh annual meeting of the New York State Fruit Growers' Association, held in Convention Hall, Rochester, January third, fourth, and fifth. The exhibits, both of orchard produce and of the necessary adjuncts for successful fruit raising were interesting and instructive. In the Secretary's report it was stated that the membership of the association had passed the one thousand mark. Much cooperative buying of spraying materials was done during the past year.

The Cornell Departments of Entomology, Plant Pathology and Farm Mechanics were represented with large educational exhibits. The latter attracted considerable attention with the exhibit of the "Cornell Sprayograph" and the demonstrations of spraying against the wind. Cornell students to the number of about one hundred and fifty from the Department of Pomology were present. A number of these did judging in the fruit exhibit which was held in conjunction with the meeting.

A feature of the meeting was a speaking contest open to Cornell students in the Department of Pomology. After a keen competition, W. H. Hook, '12, H. B. Knapp, '12, F. E. Rogers, Sp., E. C. Auchter, '12, and E. A. Brown, '13, were selected to address the meeting. Both the subject matter and the delivery of the speeches was very commendable. H. B. Knapp, whose speech appears in this issue, won the first prize of $35 and F. E. Rogers won the second prize of $15. After the contest a fruit grower in the audience very generously gave a prize of $10 to each of the other three contestants.

President Clark Allis of Medina, in his address severely censured President Taft for his apparent attitude against agriculture. He also discussed cold storage.

Wednesday afternoon was devoted

(Continued on page 172)
ORCHARD DRAINAGE
By T. B. Wilson
Hall, N. Y.

ONE of the most important things to consider in planting an orchard is whether or not the soil is sufficiently dry. An orchard planted on wet or springy ground will not thrive. Any observing person, in traveling through the country, can see many examples of parts of orchards not doing well, or some trees dying, in places where the land is low, and where water is liable to collect, without a free outlet. Then, too, the soil formation may be such as to retain or hold back the water. There may be a few sections in New York State where orchards will thrive without underdraining. In general, either before the orchard is planted or shortly after, the surplus of water must be removed by underdraining.

In underdraining a field for an orchard, it is not necessary to drain very close, but the drains ought to be at least three feet deep, unless one has a very sticky and retentive clay subsoil. Ordinarily a drain between every other row of trees will drain sufficiently.

I have one orchard set on the diagonal system, where the rows north and south are 37 1/2 feet apart, east and west the rows are 20 feet apart, but the first tree in the first row is 40 feet from the second tree in that row, and the first tree in the second row is half-way between the first and second tree in the first row.

I run the lateral drains east and west, straight up and down the hill. The first drain is 10 feet from the first row of trees, or the first tree in the first row; the second drain is 60 feet from the first drain, or 30 feet from the second tree in the first row. In this system, we have two-thirds of the trees within 10 feet of a drain, and the remaining one-third are 30 feet from any drain.

In any ordinary New York condition, this is sufficient drainage for an orchard if the drains can be put 3 or 3 1/2 feet deep.

Thorough drainage is the foundation of better agriculture.
The Cornell Countryman

February, 1912

The first meeting of the new "Agricultural College Council" was held on Saturday morning, January 6th, in the President's office, and again that afternoon in the College of Agriculture, with a partial attendance. Everything at present needed for the administration of the College was done at this time. The duties of the Director were defined and the general policies of the College were formulated.

Subject to the approval of the Board of Trustees, the Council, which was created at the last meeting of the Trustees, has entire control over the administration of the College and all of the farms belonging to it. In the interim between its meetings the Director has full charge, except in the appointing of assistant professors and professors. He and the Treasurer of the University, although not members of the Council, are expected to attend all of its meetings. Four meetings must be held and as many others as may be deemed necessary. The next meet-

ing will be before the spring meeting of the Trustees. All future Ithaca meetings will be held in the College of Agriculture itself.

By statute the Council is entitled to a member of the Committee on Grounds, and Col. H. W. Sackett, '75, was elected. Two members of the Building Committee, Willard Beahan, '78, and Hon. F. C. Stevens, former Superintendent of Public Works, were elected. Two committees appointed were: Audits and Accounts—T. B. Wilson, '88, J. N. Carlisle, and F. C. Stevens; Farms—W. F. Pratt (State Grange Trustee), R. A. Pearson, '94 (President of the State Agricultural Society), and T. B. Wilson, '88.

Those present were: State trustees, H. W. Sackett, '75, T. B. Wilson, '88, F. H. Miller; W. F. Pratt; two trustees elected by the Board of Trustees, Willard Beahan, '78, J. H. Barr, '89, and President Schurman. Dean Bailey and Treasurer Williams also attended.

School of Forestry

Seldom does the Countryman have occasion to relate such an excellent bit of news as the recent announcement that Professor Filbert Roth—present head of the Michigan School of Forestry—is to come to Cornell next fall to take charge of our new School of Forestry. Everyone was well pleased last February to learn that a Department of Forestry was to be re-established at Cornell and that Professor Mulford was coming to take charge of it. The recent appointment of John Bentley, Jr., as Assistant Professor and now the acceptance of Professor Roth seem to bear out the proverb that good fortune never comes singly. Professor Mulford was Asst.
Professor of Forestry at Michigan under Professor Roth and it is undoubtedly largely due to his influence that the appointment of Professor Roth has been brought about. Eight years spent on the Western frontier, eight years of study at Michigan, seven years in the National Forest Service, and twelve years as university professor certainly promise a wonderful fitness for the teaching of forestry. As a matter of fact, Professor Roth is considered the greatest teacher of forestry in the United States.

It is especially fortunate that Professor Roth should come to Cornell as he was Assistant Professor of Forestry here in the original school from its inception in 1898 to 1901.

Born in Wurtemburg, Germany, in 1858, Professor Roth came to the United States in 1871. The period between 1874 and 1882 he spent on the western frontier. From 1885 to 1889 he studied at Michigan. Then for five years he was a special timber expert in the Department of Agriculture. After leaving Cornell he again went into the Forest Service, having charge of all the forest reserves. Since 1903 he has been at the head of the School of Forestry at Michigan, the third oldest of any importance in the country and the second largest.

The COUNTRYMAN can but express the gratitude of the undergraduates to the Faculty of the College of Agriculture and to Professor Mulford in obtaining the services of Professor Roth. Cornell established the first school of forestry in the United States—we see no reason why Cornell should not now have the best school of forestry in the United States.

Office Chat

It is with regret that we announce the resignation of Wilfred De S. Wilson, '13, from the board, and we extend him our sincere thanks for the earnest work he always gave to the paper.

* * *

The present issue is the second special number which we have published this year, and we trust it will meet your approval. So great has the interest in fruit farming become, that we deemed it worthy of a special number, and have endeavored to have it presented from all points of view by the highest authorities.

In obtaining articles this year, we have endeavored to select subjects which would be of most interest to all our readers, and authors in whom they have the most confidence. For the hearty good will, and ready response of these authors, we wish to express at this time our sincere thanks and appreciation.

This is the first number of the paper for the second semester, and by this time you have had an opportunity to become acquainted with our general aims and purposes. Our plans for the remainder of this year are about completed, but as we start planning for our Fall numbers, we are open for suggestions, and would be glad to hear an expression of opinion from our readers. What subjects are you most interested in? Do the special numbers appeal to you? What new departments would you like to see started? How many student articles do you like? Would competitions for articles or covers appeal to you? Are we printing too many pictures? Have you any criti-
icism? (Bouquets are out of order—they require attention, and soon wither). Let us hear from you, and do not forget to mention who and what you are doing—we may want to classify you under "Former Students!"

The annual meeting of the Students' Association of the New York State College of Agriculture will convene on Wednesday, February 21st, 1912, at 10 A. M., the session continuing until 1 P. M. A strong country-life program is being prepared to include speakers of national reputation, such as Director Bailey, James W. Robertson of the Royal Commission on Industrial Training and Technical Education of Canada, and President K. L. Butterfield of the Massachusetts Agricultural College. The Association is to consider some important business in relation to the College.

Final plans have been made for a large dinner to be held in the evening at the Armory, the dinner to be open to all former students of the College and to include the annual banquet of the under-graduates. The dinner and program will occupy the entire evening. The notable speakers of the morning, Mr. Henry Wallace, and others, are on the programme, and will be guests of honor at the dinner.

The Countryman is seriously considering publishing the various offers of positions which come to the College. Just at this time there are many students, mostly short course students, available for positions as farm managers, farm foremen, and a few as farm hands. The College would be glad to learn of any vacancies for these men. They are also interested at any time to hear from former students who are available for positions.

We are extremely desirous of obtaining copies of the following numbers of the Cornell Countryman and will be glad to pay for them. December 1903, Vol. 1, No. 1; January 1904, Vol. 1, No. 2; January 1906, Vol. 3, No. 4; March 1906, Vol. 3, No. 6; April 1906, Vol. 3, No. 7; June 1907, Vol. 4, No. 9; October 1909, Vol. 7, No. 1; January 1910, Vol. 7, No. 4; June 1910, Vol. 7, No. 9; January 1911, Vol. 8, No. 4.

With the rapid growth of the College and the consequent increase in the number of student activities of the College, there comes an irresistible tendency to subordinate one's studies to them. Realizing that a high standard of scholarship is a large factor toward future success, is it not well to consider as we start a new term, to what extent we can enter activities without decreasing our standard of scholarship, and then to limit ourselves to that extent? It is narrow not to enter some activity and endeavor to make good, but remember also, that we are under the deepest of obligations to "make good" in a larger cause, and to prove to the people of New York state that their confidence in us has not been misplaced in furnishing us with the best of instruction and equipment to be had; that we are not
wasting the talents entrusted to our care.

In order to maintain the leadership which we have gained among colleges of agriculture, the standard of scholarship must be kept so high that the graduates who go out into the world will continue to reflect credit upon the institution.

The severe hail storm which struck the tobacco crop on the last Election Day of the Agricultural Association, completely destroyed the crop together with all the seed, and hereafter there will be no smoking in the Students' Room. For this, the College may well congratulate itself. Because the students are not all smokers was a sufficient reason for voting it down. It typified the capacity of the Agricultural College to stand alone in all things as they do in athletics. Having turned down a beginning, we may look outside the Agricultural College for the second step, and feel sure that a future visit to our College will not reveal a sign:

"Smoking Room"

Ladies Welcome

The members of the College were grieved to learn of the bereavement of three of the members of the faculty. Within the short space of one week Dean Bailey lost his father, Professor Montgomery lost his father, and Professor Tuck his mother.

BOOK REVIEWS

The Teaching of Agriculture in the High School by Garland Armor Bricker. Published by the MacMillan Company, 66 Fifth Ave., New York City. 184 pages. $1.00 net.

A discussion applying psychological principles to the teaching of high school agriculture and giving illustrations of laboratory exercises. The book reflects the knowledge and enthusiasm of the author in the subject.


The fourth edition of Terry and Root's treatise on potato culture has just been published. The book treats of soils, manures and fertilizers adapted to potatoes and discusses methods of planting, the best varieties to raise, care of seed, diseases, cultivation, marketing, etc. There are many cuts of efficient machinery, such as planters, weeners, cultivators, sprayers, and diggers, used in the potato industry.

Beginnings in Agriculture, by Professor Albert Russell Mann of Cornell University, Rural Text Book Series, L. H. Bailey, Editor. Published by the MacMillan Company, 66 Fifth Ave., New York City. 327 pages. Fully illustrated.

This book is founded on the suggestions in the Report of the Committee on Industrial Education in Schools for Rural Communities of the National Educational Association and designed for the purpose of introducing the study of agriculture into the seventh and eighth grades. The most noticeable qualities of the book are its clearness, conciseness and the presence of a nature-study spirit.

Farm and Garden Rule Book by L. H. Bailey. Published by the MacMillan Company, 66 Fifth Ave., New York City. 567 pages. $2.00 net.

This book has long been a standard as a Horticulturists' Rule Book. The name has been changed since it covers a larger field.
CAMPUS NOTES

CALENDAR

February 10th—March 10th
Tuesday, Feb. 13 Association Meeting.
Saturday, Feb. 17 C.E. vs. Ag. (B. B.)
Lazy Club.
Monday, Mar. 5 Round-Up Club. Lazy Club.
Thursday, Mar. 7 Monthly Assembly.

* * *

The Governor’s Message was the subject of Dean Bailey’s talk at the January Assembly. He read the parts concerning conservation and agriculture and spoke in part as follows: “The term ‘conservation’ was first applied to the forestry problem but has now come to have a wider meaning. Many sections of the country are now participating in this movement. The State of New York has a Conservation Commission whose chairman will speak here Farmer’s Week. This college is an instrument of conservation. The Conservation movement has resulted from the idea that the natural resources ought to be handed down unimpaired to our descendants. The policy that the water power of the state shall be for the use of the people and that hydro-electric power shall be sent to every municipality, saving 20,000,000 tons of coal annually, is a wise and constructive one. We make too little use of our streams and go too far afield for our power.

The Commission of Food Supply of New York State, the pure food provisions and the increased powers of inspection are also forward steps. The time is coming when the farmer can solve his own problems but there are some problems which the governments must solve. The Public Service Commission ought to have wider powers. We no longer deny that the government can regulate business. The farmer ought to be benefited by this regulation. The parcels post is a great necessity, for the express companies do not adequately serve him. He should be a free economic agent.

Middlemen are necessary and many of them are honest. But this is no reason why they may not be regulated. If they can be licensed as they sometimes are, why not go a step further. Every state ought to have some department which attends to this regulation and we are gradually coming to it.

The high cost of living is not entirely due to the middleman and perhaps not at all. There are many contributing causes. The consumer, himself, bears an important relation to the cost of living. We live too much from tin cans and small boxes. Our provisions last only from day to day and we live literally from hand to mouth. The result is that the consumer pays for the increased transportation and this is no small item. The architects could render a great service if they would
provide more room for storage. The time is coming when we shall have public storehouses.

There is no one panacea for the high cost of living. Perhaps another contributing factor is that we have lost pride in dirty hands. If we have, we are not grasping the realities of life. There are too many between us and our necessities. It is to be wished that the farmer will not want to get away from his station."

After Dean Bailey’s talk some excellent violin selections were given by Miss Cooper.

* * *

The Extension Department has been very active during the past month. It has arranged for about fifteen extension schools lasting from one to two weeks according to arrangement and centralizing the instruction upon subjects suitable to the particular locality. The schools which have been held were at Cherry Creek, Chautauqua County, Alden, Erie County, Wyoming, Wyominging County, Ballston Centre, Saratoga County, Falconer, Chautauqua County, Watertown, Jefferson County, Lowville, Lewis County, Riverhead, Long Island.

The extension work done by the different departments has been as follows: Professor J. E. Rice and L. M. Hurd addressed a meeting at Trumansburg, Professor Rice also addressed one at Hoosic Falls, and L. M. Hurd addressed one at Oaks Corners. A. C. King addressed meetings at Ensenore and Salamanca.

At the show of the Rochester Genesee Valley Poultry Association, the college was represented by Professor J. E. Rice and L. M. Hurd, and at the show of the Jamestown Poultry Association by R. P. Trask.

* * *

Prof. J. H. Comstock of the Department of Entomology addressed a gathering in the parlors of the Unitarian Church during the month. The subject of his address was "Heredity in Animals." Lantern slides were used to illustrate throughout.

This year’s meeting of the Breeders’ Association held at Washington on Dec. 28, 29, and 30, was one of the most successful ever held by that organization. Drs. Webber, Gilbert and Love of the Plant Breeding Staff and ten of the graduate students of the College were in attendance. Dr. Webber has been Chairman of the Plant Section for some time but retires this year from that position to the more subordinate one of Secretary in order to devote his time to the Associate Editorship of the official organ of the Association—The American Breeders’ Magazine. Dr. Webber’s address to the meeting was entitled “The Effect of Research in Genetics in the Art of Plant Breeding.” There were a number of papers read also and the appended list gives those by the Cornell representatives.

Dr. Webber on “The Selection of Corn to Produce Early Maturity.”

Dr. Love on “The Relation of Ear Characters to Earliness in Corn,” “Comparison of Yield between Hybrids and Selections in Oats.”

Dr. Gilbert on the “Report of the Committee on the Teaching of Genetics,” and in conjunction with Mr. C. E. Myers, ’10, on “Does Hybridization Increase Variability?”

Mr. C. E. Leighty, Assistant in Plant Breeding, on “The Effect of Crowding on the Co-relation of Characters in Oats.”

Mr. R. Y. Winters, Assistant in Plant Breeding on the “Inheritance of the Size of Corpuscles in the Pepper Hybrids.”

Mr. H. B. Frost, “The Origin of an Early Variety of Matthiola by Mutations.”

Mr. H. W. Drinkard, “A Comparison of Pure Lines of Browallia and their left Hybrids.”

Mr. R. J. Evans, “Further Studies of the Relation of Temperature to Variations in Pure lines of Stellaria.”

* * *

This year during Farmers’ Week the Dairy Department intends to hold a prize contest for scoring and judging of butter and cheese open to anyone in New York State.
The Countryman announced last month that the Department of Animal Husbandry had just purchased two very old English books on horse-breeding. Perhaps a few words from the title page will be sufficient to induce more persons to look them up on the shelves of the University Library. The first of these is on "Horsemanship," by Blundeville (Thomas), in old English wording and profusely illustrated with wood-cuts. The second is on "Horses, the Anatomy of," by Andrew Snape, Junior Farrier to his Majesty. This book contains an exact and full description of the frame, situation and connection of all his parts (with their action and uses.)

The Nut Growers Meeting held at the Agricultural College, December 14 and 15 was very successful. Interesting and instructive papers were read by T. P. Littlepage, a lawyer of Washington and Prof. E. L. Lake and C. A. Reed of the United States Department of Agriculture.

Prof. Livermore, of the Department of Farm Management, was at Washington, D. C., a short time ago to present the results of the Agricultural Survey Work of the Department to the members of the office of Farm Management of the United States Department of Agriculture.

Prof. Warren is scheduled for addresses on Farm Management at Farmers' Week meetings at Guelph, Ontario; Springfield, Ohio; Morrisville, New York; and at Pennsylvania State College. He will also speak before the New York State Agricultural Society, and the New Jersey State Agricultural Society.

The Department of Plant Pathology in cooperation with the Department of Farm Mechanics, gave an exhibit at Rochester. The Cornell Spray Tower developed in one of the field laboratories of the Department of Plant Pathology, demonstrated spraying in the wind. * * *

The American Society of Agricultural Engineers met at St. Paul on December 25 and held a two days' meeting. Howard W. Riley of the Department of Farm Mechanics, was elected president for the coming year. This society which has a membership of 62, includes most of the teachers of Farm Mechanics, Farm Engineering, and Rural Architecture, in the United States, and also many representatives of firms manufacturing agricultural machinery. During the four years the society has been established, it has held five meetings, conducted one or two public competitions of machinery, and has published its proceedings every year—in fact, a very promising future is predicted for it.

* * *

The Homemakers' Conference is conducted by the Home Economics Department during Farmers' Week. Lectures and exhibition of work are presented throughout the week upon subjects pertaining to home life. This year lectures will be given by Miss Rose upon food and nutrition, by Miss Van Rensselaer upon household management and sanitation, by Mrs. Young upon house furnishing and decorating, by Mrs. Harrington upon equipment and household management, by Mrs. Watson, of Alfred, upon principles of dyeing, by Professor Howard Riley upon sewage disposal, household mechanical contrivances and plumbing.

Mrs. O. S. Morgan, who was in attendance upon Farmers' Week last year and who furnished musical entertainment throughout the week, will be present and speak upon music for rural communities. Her work will be illustrated by song.

The Homemakers' Conference is officered by women of the state.

One day during Farmers' Week will be of special interest to Winter Course students of previous years. The session will be in charge of the Winter Course students of 1911-12. It is
hoped that many of the former Home Economics Winter Course students will be present.

* * *

The following officers of the Craig Club have been elected. President, Richard L. Meyers; vice-president, Ellwood Douglass: secretary, Miss Beulah Dayton; treasurer, Michall Joseph. The program committee appointed are Miss Mary M. Jones, Walter Peterson, and Ralph Westlake. The work of these officers and this committee together with co-operation of the members of the club make the Craig Club, one of the most successful clubs ever organized in the College of Agriculture. The meetings are full of enthusiasm, and the topics discussed are close to the fundamentals of life rather than of agriculture. Miss Yates' talk on University Education versus Home Culture will long be remembered. At all the meetings there is good music and refreshments. The Craig Club basketball team defeated the General Agricultural team by a score of 13-10.

* * *

The Department of Plant Breeding has sent a large exhibit to the Lincoln Agricultural School at Lincoln, Nebr., to be used as an object lesson for the boys of this school. Most of the 200 students of this institution were waifs picked up on the streets of New York. They are taught the rudiments of agriculture and are given actual experience in the care and management of cattle, horses, poultry, etc. When they are 14 to 16 years of age, they are recommended for work on the farm. The farmers find the work of these trained boys of great value and the majority of them develop into useful citizens.

* * *

The Reunion and Dinner of the Synapsis Club was held in conjunction with the Association Meeting at which fifteen old members of the Club were present, besides guests from five or six different states. The yells of Illinois, Kansas and Cornell mingled. Everyone reports an extremely pleasant affair.

During the month, Mr. A. C. King spoke at Truxton, Little York, Preble, and several times each in Courtland, Tompkins and Yates counties and Mr. Gott addressed several meetings in the western part of the State.

* * *

The Agricultural Association elections for the second term were held on January 16. This was the first time that the new method of election has been used. In all, three hundred and thirty-four votes were cast. F. E. Rogers, Sp., was elected president; C. W. Whitney, '13, vice-president; Miss D. Baker, '12, secretary; and W. R. Wilson, '12, treasurer. H. Embleton was elected to the executive committee.

* * *

The Sophomore Agricultural class held a meeting January 15th. After a short business meeting, Professor A. R. Mann gave a very stimulating talk on, "Student Activities."

* * *

The following have been chosen to compete in the annual Eastman stage, held Farmers' Week: W. H. Hook, '12, M. B. Goff, '13, C. W. Whitney, '13, W. H. Bronson, '14, F. E. Rogers, Sp., and M. C. Kilpatrick, Sp.

* * *

The Agricultural class of 1914 gave a dance in the Sage Gymnasium, on the evening of January 19. It was well attended and all present spent a very enjoyable evening.

* * *

Professor E. G. Montgomery former-ly Professor of Field Crops at the University of Nebraska, will fill the vacancy in the Department of Farm Crops. Professor Montgomery graduated from the Nebraska Agricultural College with the class of 1906, and for the past five years has been engaged in experimental work in Field Crops at that institution.

* * *

It is interesting to note, from the last issue of the Announcer, that at present there are between seventy-five and one hundred experiments being carried on in this College by the various departments.
FORMER STUDENTS

GEORGE WENDELL BUSH.

'05, B. S. A.—George Wendell Bush was born on a farm at Berkshire, N. Y. After graduation from the Newark Valley High School in 1901, he entered Cornell and was graduated in June, 1905.

He then accepted a position as a foreman on E. H. Harriman's large estate at Arden, Orange Co., N. Y. Soon afterwards he was made manager of the farms. Later he also became connected with the Arden Farms' Dairy Co. of which the Harrimans are the principal owners, in conjunction with Edwin K. Beekman, the veteran New Jersey fruit grower. Mr. Bush is now a director of this company and deputy to Mrs. Harriman in the company.

Since 1906, Mr. Bush has drained and brought into cultivation several hundred acres of what was formerly the most worthless swamp. This reclaimed area is now used for both meadow and garden land. The meadow portion is now producing from three to four tons per acre of the highest quality hay. On a portion of the black muck soil reclaimed, over 1100 barrels of onions, besides several hundred barrels of other vegetables, were grown during the last season.

And all this now fertile land was, five years ago, a dense thicket of bogs and underbrush.

Five small and old orchards have been pruned, cultivated, sprayed and fertilized, until, instead of a few scattering knotty apples, they have produced during the past three seasons an average of 800 barrels, these selling as high as $3.50 per bbl. for export.

Alfalfa has been brought into the farm rotation until a considerable area is now producing six tons per acre at four cuttings. Clover and soy beans have found their way into the rotation as cover crops, the returns from these now reaching well up into the hundreds of dollars.

In conjunction with the Arden Farms' Dairy Co., there has been developed a herd of about one hundred head of pure bred Holstein Friesians besides the regular grade herd of four hundred cows, which are bred only to pure bred sires. The Sharpless milking machines have been installed and an effort is being made to produce milk with the maximum bacterial count as low as 10,000 to the cu. cm., by keeping the milk away from outside air at all times.

One of the most important things of interest in connection with the management of this large property is that it is operated so as to show a good percentage income on the capital invested.

As was reported in a recent number of the COUNTRYMAN, Mr. Bush was married last August to Miss Meta Elizabeth Smith, at Oseo Lodge, Monroe, N. Y.

'91, B. S. A., '98, M. S. A.—Horace Atwood who is assistant agriculturist at the West Virginia Experiment Station, Morgantown, W. Va., is the author of a recently published station bulletin entitled "West Virginia as a Poultry State." The bulletin points out some of the manifest advantages of West Virginia from the standpoint of the poultryman, besides containing much on the subject of poultry raising.
'96, B. S. A.—Joseph C. Blair was here recently inspecting the buildings and work of the College of Agriculture. He was especially interested in the development of Rural Art. Mr. Blair is Professor of Pomology and chief in Horticulture in the College of Agriculture and Experiment Station of the University of Illinois, at Urbana, Ill.

'98, M. S. A.—James E. Higgins is Horticulturist at the Hawaii Experiment Station, Honolulu, H. I.

'03, B. S. A.—Herbert A. Hopper is managing his farm on West Hill, Ithaca. This winter he is also employed as an instructor in Extension Teaching at the extension schools held at various places through the state.

'04, A. B., '05, M. S. A.—R. S. Woglum is a special agent of the Bureau of Entomology at Washington.

'05, B. S. A.—J. M. Swain, formerly professor of Entomology at McDonald College, St. Anne, Canada, has accepted a position as assistant entomologist for the Dominion Government at Ottawa.

'06, B. S. A.—P. L. Lyford is a forest engineer and his address is 206 Board of Trade, Montreal, Canada.

'06, B. S. A.—Charles W. Mann, who is with the U. S. Bureau of Plant Industry, visited here during the holidays. He is conducting special investigations concerning the transportation and storage of grapes, apples, and citrus fruits. Mr. Mann spent most of last year in California.

'06, B. S. A.—Charles F. Shaw is assistant professor of agronomy in the Pennsylvania State College.

'07, B. S. A.—John Goldhaar is teaching manual training in the public schools of New York City. His address is 1975 Kelly Street, Bronx, New York City.

'07, W. D.—C. A. Thornton is now manager of a certified milk farm owned by John H. Baker at East Aurora, N. Y.

'08, B. S. A.—Mr. Chester Jermain Hunn is well known to all who came to Ithaca prior to his graduation. They and those who have come since that time and have there met his worthy father, Mr. C. E. Hunn, will know where "Chet" first caught his inspiration for horticultural work. After matriculation from the Ithaca High School, he entered the freshman class in the College of Agriculture and was graduated in 1908. Before graduation there came an offer of a position in the Horticultural Department of the Hawaii Experiment Station in Honolulu and having completed more than the required number of hours for his degree, he accepted the offer and went to his new field of labor in the winter of 1908. This work has given him an excellent opportunity for studying tropical plants and particularly the fruits of the tropics. He has devised very complete outlines for the systematic study of the varieties of some of these fruits. In November, he made an extended trip on Hawaii, the largest island of the Hawaiian group, to investigate the conditions of avocado growing and search for rare or off-season varieties of this fruit now springing into so much promise.

Not only has Hunn been in horticultural work but he has served as the very active and efficient Secretary-Treasurer of the Cornell Club of Hawaii.

Mr. Hunn was the unfortunate victim of an attack of typhoid fever in the latter part of the summer but his friends will be gratified to know that his robust constitution and good care brought him safely to health and he is now adding daily to his avoirdupois.

'08, B. S. A.—John Vincent Jacoby, of Reservoir Avenue, Ithaca, visited in Ithaca the latter part of last week. During the past year he has been on a fruit farm at Middleport, N. Y. He is now to enter the employ of the Niagara Sprayer Company at Middleport, and in the spring is to manage a small farm at Lockport for one of the officials of the Niagara Sprayer Company.

'08, W. P.—W. P. Lippincott, has resigned as assistant professor of poul-
try, Iowa State Agricultural College to accept a similar position at Kansas State Agricultural College.

'08, W. P.—Allen G. Philips was married on Saturday, April 1st, at West LaFayette, Ind., to Grace Hooper Woodward.

'09, B. S. A.—Miller A. Travis recently resigned his position as superintendent of the Beechwood Dairy at Irvington-on-the-Hudson to take a position as Bacteriologist and Inspector for the Detroit Creamery Co., at Detroit, Michigan.

'09, B. S. A.—E. H. Thompson, scientific assistant in the Office of Farm Management, U. S. Dept. of Agriculture, visited on the Campus recently.

'09, B. S. A.—G. N. Wolcott, who is with the U. S. Bureau of Entomology, has been studying the boll-weevil at Dallas, Texas. His work has been so successful that Dr. L. P. DeBussy of Summatra, Dutch East Indies, has asked permission of the Bureau of Entomology to allow Mr. Wolcott to visit the West Indies to collect parasites and pernicious insects to be shipped to Dr. DeBussey for use in experimental work.

M.S.A. '10.—M. C. Burritt, editor of the New York Tribune Farmer visited on the Campus recently.

'10, Ph. D.—E. P. Humbert recently accepted the position of Agronomist at the New Mexico Agricultural College and Experiment Station.

'10, B. S. A.—Ralph E. Wadsworth & Co., have established a commercial florist business at Northboro, Mass. They have one greenhouse completed and intend to have 75,000 square feet under glass. They are going into the wholesale growing of cut flowers.

'10, W. H.; Michigan, A. B.—Geo. H. Sprague visited Ithaca on January 6th. He is foreman of the fruit department of the T. D. Rice estate at Turner Hill Farm, Ipswich, Mass. There are about 100 acres of orchards under his management.

'07—'10, Prof.—Mr. and Mrs. Garrett S. Collier of Kinderhook, N. Y., announce the engagement of their daughter, Maud Bain to Mr. L. B. Judson. Mr. Judson gave up his position here as Assistant Professor of Horticulture to assume the management of his fruit farm near Kinderhook.

'10, W. A.—Wm. Hotailing is managing the Hillcrest Farms, near Binghamton, N. Y.

'10, W. A. '11, W. H.—Carl F. Juengling is plantation manager for the Colombo Tropical Fruit Company of Buffalo, N. Y. Their plantation is located at Vega Baja, Porto Rico, and citrus fruits and pineapples are the principal crops grown.

'11, B. S. A.—Floyd W. Bell is taking advanced work in animal husbandry at Ohio State University. He visited at the college here recently.

'11, B. S. A.—F. E. Benedict is advertising representative of the American Poultry Journal, Chicago, and is traveling in the middle west. He was married on August 26 at the Court Street Church in Columbus, O., to Miss Viola E. Albright, daughter of Mrs. Minnie Albright of Ithaca.

'11, B. S. A.—John E. Dougherty was married on Saturday, Dec. 23d, at West New Brighton, N. Y., to Miss Ada Richmal Heap.

'11, W. D.—W. R. Bardon is manager of a certified milk plant owned by the Detroit Creamery Co., just out of Detroit, Mich.

'12 Ex.—Douglas G. Woolf, who is away on a leave of absence, is occupying the position of head chemist in the Waldrich Bleachery at Delawanna, N. J. He is also teaching Chemistry in night school at Montclair, N. J. He expects to return next fall to complete his course, and we hope, to reassume his duties on the Countryman. His address is 150 Claremont Ave., Montclair, N. J.

(Former students: You like to hear from your former college friends, do you not? They are just as interested in hearing from you. Will you send us a few lines so that we can let your friends know where you are and what you are doing?)
A GASOLINE TRACTOR

A gasoline tractor which promises to be of practical value to orchardists is shown herewith. The tractor is built low enough to work under trees in an orchard and is designed as a one-man machine. The motor is a 35 horsepower two cycle gasoline engine of marine type.

The accompanying illustration shows the tractor as it appeared in a demonstration on the farm of the Willard State Hospital at Willard, last summer. The tractor was used in pulling a three gang plow on a rather stiff clay soil.

WESTERN FARMERS MOVING EAST

Commissioner Pearson of the State Department of Agriculture reports a general migration of Western farmers to New York abandoned farms. The New York exhibit at the American Land and Irrigation Show justified this migration. It has been proven that the so-called abandoned farms in this state can be turned into splendid profit producers if properly managed.

COUNTY FAIR STATISTICS

The Federal Department of Agriculture in connection with the Farmers' Institutes conducted 71 instruction trains covering over 40,000 miles during the last year, and has also collected and published information respecting the organization and conduct of county fairs. Over 12,000 fair associations are in operation in the several states, representing a membership of over 246,000. In 1909 the gross income was about six and one-half millions of dollars, and the amount paid in premiums over two and one-half millions. The attendance that year was between fifteen and sixteen millions.

STANDARD OF LEGAL MILK

Dr. L. L. Van Slyke who addressed the last Milk Problem Conference in New York supported the retention of the present Standard of Legal Milk, the composition of which the law says shall contain: 3% of fat and 12% solids. A lower standard would be detrimental, because it would give an opportunity for adulteration, as by
the addition of water, skimmed milk or other substances, and because milk of a lower percentage of solids would be of much less value to the consumer. The time is near when milk will be sold under a guarantee of percentage of fats and solids. This will encourage the sale of milk on the basis of value, encourage production of richer milk, and tend to promote the knowledge of milk composition.

* * *

PARAFFINING CHEESE

Bulletin 181, of the Bureau of Animal Industry, of the U. S. Department of Agriculture, entitled “Methods and Results of Paraffining Cheese,” has recently been issued. Although this practice has been in use only a few years, nearly all cheese of the Cheddar type made in the United States is paraffined before it reaches the consumer. The method employed is to immerse the cheese in a paraffin bath at 220°F for 2 to 10 seconds. This process improves the appearance of the cheese, prevents, to a great extent, loss by evaporation, and inhibits growth of mold.

* * *

SCARCITY OF HORSES FOR ARMY USE

In late years there has been considerable difficulty in obtaining suitable horses for the United States Army, and the supply seems to be steadily diminishing. As an aid to supplying horses of this kind, an appropriation was made by Congress whereby stallions should be furnished free to horse-owners in suitable localities, in return for which the government has an option at a fair price on the foals at a certain age. This plan is being tried in Virginia and is progressing successfully.

* * *

57TH MEETING OF THE WESTERN NEW YORK HORTICULTURAL SOCIETY

The annual meeting of the Western New York Horticultural Society was held in Convention Hall at Rochester, Jan. 24–26. The fruit display and the show of apparatus occupied the space of the hall, annex and basement. Prominent space was taken by exhibits of the Geneva Experiment Station and of the College of Agriculture. A large number of students and faculty members of the college attended the meeting. The judging of exhibited fruit was done by students from the class in Advanced Pomology.

There were a large number of addresses by prominent authorities and practical fruit-growers on all phases of the fruit industry.

* * *

DAIRYMEN MEET AT OLEAN

The annual convention of the New York State Dairymen’s Association was held at Olean, N. Y., December 12–13. Addresses were made by Dr. H. J. Webber on breeding; cooperative tests, by Helmer Rabild; animal nutrition, by Dr. W. H. Jordan; milk in the diet, by Prof. Flora Rose; certified milk, by W. E. Miller; and market defects in butter, by C. W. Fryhofer, dairy expert at New York. Resolutions were passed denouncing the adulteration of dairy products in any manner whatever; recommending that the use of the word “Butterine,” as used by oleomargarine makers, be made unlawful; against the proposed Canadian reciprocity act; and endorsing the work of cow-testing associations.

* * *

THE PROPOSED MCKINLEY BILL

Effort has taken concrete form, looking toward enlarged appropriations at Washington in the interest of the agricultural colleges. A bill was introduced last summer by Representative McKinley, and is to appear this winter with modifications, the latter approved by the Illinois state farmers’ institute, the state board of agriculture, national grain dealers’ association and by other agricultural and commercial organizations.

The McKinley bill is outlined in brief herewith; it is proposed that congress pass a law providing for an annual appropriation of a sum equal to one mill for each acre of farm land in each state for the year ending June
30, 1913; an annual increase of one mill each year for nine years along this line. This will mean that at the tenth year this increased appropriation shall be the equivalent of one cent for every acre of farm land in the respective states.

The amended McKinley bill provides that the sums appropriated to the several states are to be used solely to employ and send out successful farmers and practical field demonstrators, properly instructed and qualified. These are to travel over the state, or the certain sections thereof, to which they are respectively apportioned, teaching, encouraging and helping farmers and land owners to adopt and put into regular practice the improved and scientific methods of agriculture as discovered and practiced by the various land-grant colleges.

* * *

NATIONAL IRRIGATION CONGRESS

The scope of the 19th National Irrigation Congress which convened in Chicago, December 5th, continuing four days, was much broader than ever before. While heretofore a great many of the congresses have devoted all of their attentions to irrigation matters pure and simple, this congress in addition gave much consideration to matters of drainage. When it is recalled that there are millions of acres in the so-called humid region now unproductive because of the inability to get rid of excessive moisture, the importance of this innovation is apparent.

The eastern part of the United States has felt that the irrigation congress has to do only with the far west, while, as a matter of fact, the last congress, at least, considered the middle western and eastern problems, as well as those west of the Mississippi river.

* * *

Some Answers to an Examination

Given by a N. Y. State City Board of Health for the Position of Milk Inspector.

Question.

(a) Name the constituents in milk.

(b) Give the percentage of each in normal milk.

Answer.

(a) Fat, albumen, ash, bacteria. (b) Fat should at least contain from three to four per cent.

Albumen should not contain any more than five per cent. and no less than three per cent.

Ash will not contain any more than five per cent. if the milk is said to be pure and clean.

Bacteria will contain from 75 to 85 per cent.

Question

(a) Define pasteurization.

(b) Name the advantages and disadvantages of pasteurization.

Answer.

(a) Pasteurization is a field of grass where a cow may be turned out to get the fresh air, its eating for the day, and its necessary rest.

(b) The advantages derived are that a cow getting plenty of grass, the necessary rest and water it will produce wholesome milk, that is it will contain all the parts and come up to market requirements.

The disadvantages are that a cow while out in pasture will wander away and probably enter a garden where onions and the like are raised and possibly eat some of the onions and in that way the milk would not come up to the standard, that is it would have that onion taste. Another disadvantage is that a cow laying down in a field is apt to lay on some stones and hurt the udder which is dangerous.

* * *

BOVINE TUBERCULOSIS

Farmer’s Bulletin 473, soon to be issued by Secretary Wilson of the United States Department of Agriculture, contains an important and most comprehensive statement of facts on bovine tuberculosis. The bulletin deals with the history, nature, symptoms of the disease; how it spreads, how a herd is infected, the tuberculin test, and the prevention and suppression of the diseases.
NEW YORK STATE FRUIT GROWERS' ASSOCIATION
(Continued from page 150)

for the most part to the subject of spraying. Professor H. H. Whetzel
spoke on the Baldwin spot which is a physiological disease and should not
be confused with the stippen which can be controlled by spraying. Profes-
sor Donald Reddick spoke on the winter injury and told how to deter-
mine the minimum night's tempera-
ture as early as eight o'clock. Profes-
sor G. W. Herrick and Professor P. J.
Parrott of the Geneva Station dis-
cussed the insect pests of the past
season. In the evening session Pro-
fessor M. A. Blake of New Jersey
discussed the subject of peaches very
comprehensively.

In the Thursday morning session
State senator H. M. Dunlap of Illinois
spoke on some of the factors in suc-
scessful apple growing. He advocated
the use of the tractor. Lloyd S.
Tenney gave a very interesting and
instructive address on success and
failure in cooperation and recom-
manded that the town of Hilton
start a cooperative association. That
this address has already borne fruit
was evidenced by the great interest
expressed in cooperation throughout
the meeting. In the afternoon, Mrs.
Dunlap, the senator's wife, spoke
on a balanced ration for man, and
recommended that domestic science
be taught more widely to the girls
of the country.

The banquet, held Thursday even-
ing, was one of the main events of the
convention. It was also the largest
banquet ever held under the auspices
of the Association, there being eight
hundred and sixty present. After a
very satisfying menu, Dr. W. H.
Jordan, of the Geneva Station, as
toastmaster introduced the following
speakers: Honorable Charles E. Og-
den of Rochester, who spoke on the
relation of that city to the surrounding
country; State senator H. M. Dunlap
of Illinois; Reverend T. Maxwell
Morrison, who spoke on the social
environment of the farm; Professor
M. A. Blake of New Jersey, who said
a few words on the value of fruit
exhibitions; Mrs. Dunlap, the sena-
tor's wife; Charles K. Scoon of Geneva
and Commissioner Raymond A. Pear-
son, who spoke on the closer relation-
ship between the producer and the
consumer, thus closing a very enjoy-
able evening.

Friday morning Commissioner Pear-
son spoke on what the west had taught
us regarding the successful marketing
of fruit. The fruit growers should
let the consumers know that New
York can produce good fruit, and then,
having once gained a reputation, live
up to it. Professor U. P. Hedrick of
the Geneva Station then spoke on
"pedigreed" fruit trees, pro and con.
In the afternoon Dr. Frank H. Lattin
of Albion spoke on his experiences in
renovating old orchards in Orleans
and Oswego counties. Dr. Lattin
has had great success along these lines
under peculiarly adverse conditions.

Besides the regular speakers on the
program, a no less instructive feature
was the question box, and discussions
where one could hear practical fruit
growers give their opinions on sub-
jects of interest to them. Everyone
that attended the meeting received
inspiration to give his orchard better
care, drainage and tillage, and above
all to give the consumer a square deal
and an honest pack.

The officers elected for the current
year are: President, Clark Allis of
Medina, re-elected; first vice-presi-
dent, A. C. King of Trumansburg;
second vice, Luther Collamer of Hil-
ton; third, G. W. Miller of Byron;
fourth, George S. Clarke of Milton;
secretary-treasurer, E. C. Gillett of
Penn Yan, re-elected. The executive
committee was re-elected.
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The Most Popular General-Purpose Plow is

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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.

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<tr>
<th>Number</th>
<th>Capacity</th>
<th>Weight</th>
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<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>
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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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UNITED STATES

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March, 1912.
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PLANT BREEDING

By C. H. Myers
Instructor in Plant Breeding, Cornell University

DURING the past ten years we have been reading and hearing much about the conservation of our natural resources. Both state and national officials have joined in their efforts to forward this great work. In the earlier history of the movement the resources considered were mainly forests, minerals, water power, etc. In other words, a large share of the talk about conservation, concerned only a very small portion of the resources. Now, however, we think of the soil as the great national resource, for from the soil must spring the sustenance for the nation.

At the present rate of increase, our population will be doubled in fifty years. The production of crops must keep pace with the increase in population or the development of the nation will be seriously hindered. During the preceding ten years the crop production of the United States has increased 20 per cent. For the same period the population has had an increase of 21 per cent.

There are three ways of increasing the total production of crops, viz.:

(1) Increased acreage; (2) better methods of tillage, including cultivation and fertilization; (3) better breeding.

Very little land in this country remains to be brought under cultivation. True, irrigation and drainage projects will increase the total acreage to some extent, but this will be inconsequential when compared to the whole. During the past ten years the total area of cultivated lands has increased only four per cent. in spite of high farm prices.

It is not the purpose of this article to discuss methods of cultivation and fertilization. These are highly important and deserve all the emphasis that is being laid upon them. The soil must contain an abundant supply of plant food and this should be kept in an available condition by proper systems of cultivation and crop rotation. However, this process of increasing yields by bettering the environment is an expensive one, especially when compared with the increase obtained by better breeding. At best an application of fertilizer is efficient for only a few years. But the force of inheritance is much stronger. In Hunt's Cereals in America may be found this striking statement concerning the importance of plant breeding: "Hereditity, however, is a silent force, which acts without expense. If a plant be discovered that would produce because of the force of inheritance only one grain of maize more on each ear than at present, it would be capable of increasing the maize crop of the United States five million bushels of maize, not next year alone but for years to come. This is the significance of improved seed." It would seem that here, indeed, is a fertile field for work in the conservation of resources. These high yielding types of plants should be isolated and preserved for purposes of production.

Voltman, the eminent German agriculturist, is of the opinion that during
The last fifty years, the crop production of that country has been increased 25 per cent, by the introduction of improved seed.

The subject of Plant-Breeding is a comparatively new one and has undergone great development within recent years. The re-discovery of Mendel's Law in 1900 gave a new impetus to research work along the lines of heredity. The publication of De Vries epoch making Mutations Theorie has also had a stimulating effect. There are many problems that yet remain to be solved. The old questions of the inheritance of acquired characters, the accumulative effect of selection, and the origin of new species and varieties, are still disputed. But the working of the fundamental principles is well understood and the practical application of them is producing a decided improvement in many of our agricultural varieties.

There are two methods to be followed in the improvement of plants. One of these is hybridization, the other is selection. It would be hard to state which of these two methods has been productive of the greatest results. It is true that their effects cannot always be separated, for selection must be practiced to preserve and increase new forms brought into existence by hybridization. The technique required to perform hybridization work, to a large extent, takes it out of the hands of the layman, except in a very general and more or less inaccurate manner. On the other hand, the method of selection is open to every farmer who will but train his power of observation to discover new and valuable forms. These forms may be the result of natural or accidental crosses or they may be the mutations of De Vries, but no matter how they have arisen they can be made available only by selection and isolation. Hundreds of such instances might be mentioned in proof of this statement. Suffice it to say that the literature abounds with accounts of the production of new varieties by the selection of chance aberrant forms.

The federal and state experiment stations are naturally the leaders in agricultural experimental work, although many commercial organizations have done and are doing excellent work. It should be of interest to the readers of this magazine to know what the Department of Plant-Breeding at Cornell is doing along the lines of plant improvement.

One of the oldest and most import-
ant lines of investigation is that with timothy. These experiments were begun in 1903, and are still in progress. The method of selection is the one that has been used, no pollination being performed other than enough to insure the purity of selected strains. The original planting included something like 20,000 individual plants, the seed for which was obtained from more than 230 places in the world. In this short account it is impossible to give the details of the experiment. These are to appear soon in a forthcoming bulletin; here the final results will be sufficient.

From the thousands of plants grown and studied some 200 different types or varieties have been isolated. Some of these are valuable types while others are of little use. Seventeen of the most promising ones have been increased, and tested for the last two years in comparison with plats grown from good, commercial seed. All of the plats are of a uniform size and all receive exactly the same care and treatment. Every fourth plat in the series is grown from commercial or check seed. The summary of the results of this year’s test appears in Table I.

This gain of 1.5 tons per acre is larger than the present average yield of the state. It is not unreasonable to expect that the total production of timothy in New York State will increase decidedly as soon as these varieties may be generally distributed.

### TABLE I

**Comparative Yield in Tons Per Acre of 17 New Varieties of Timothy and Timothy Grown from Ordinary Commercial Seed**

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<tr>
<td>Average 17 new varieties crop 1911</td>
<td>3.5</td>
</tr>
<tr>
<td>Average commercial seed crop 1911</td>
<td>2.0</td>
</tr>
<tr>
<td>Difference</td>
<td>1.5</td>
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</table>

Some interesting and valuable results have been obtained in the breeding of corn. Increased yield and maturity are the things to be attained. This work is carried on mainly in cooperation with practical growers. Only one instance will be cited to show the result of this work, for in a general way the same result has been obtained in different parts of the state where the experiments have been conducted.

A breeding plat for increased maturity has been conducted upon the farm of Mr. G. R. Schaubler at Ballston Lake. The seed for the beginning of this experiment was a western dent known as Funk’s Ninety Day. In the first year’s test only 13 ears out of every hundred came to maturity. In
1911, after three years of selection from these matured individuals, 72 ears out of every hundred ripened. These results are shown graphically in Plates I and II. In each of these pictures the pile of corn to the left is made up of the ripe ears from five breeding rows, while the pile to the right is made up of the unripe ears. Plate I represents the original unselected seed, while Plate II represents the selected made. In Table II will be found a summary of a two years' test of these new varieties in comparison with the ordinary commercial variety.

The work in wheat breeding is being carried on in much the same way as is done with oats. As yet the work has not gone far enough to draw definite conclusions, although many of the selections are giving substantial gains over the commercial varieties. These

seed for 1911 or the third year's result. In this test the two lots were grown side by side.

**TABLE II**

**Comparison in Yield of New Hybrids and Selections With Ordinary Commercial Varieties of Oats**

<table>
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<th>Two year average yield bushels per acre</th>
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<tr>
<td>10 best hybrids</td>
<td>59.0</td>
</tr>
<tr>
<td>10 best selections</td>
<td>58.1</td>
</tr>
<tr>
<td>8 best varieties</td>
<td>50.8</td>
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In the breeding of oats both hybridization and selection have been practiced. Crosses have been made to produce new forms and selections of already existing forms have been gains range from three to eight bushels per acre.

Experiments in potato breeding are being conducted to prove the efficiency of hill selection. Excellent results are being obtained by the selection and propagation of individual tubers having a large yielding capacity. The comparative yield from the stem and seed end has been tested. As an average of 22 varieties for two years, the seed end gave a yield of 180 bushels per acre, while the corresponding yield for the stem end was 151 bushels per acre.

In addition to the crops mentioned above, experiments are being started
with buckwheat, clover, peas, and beans. This work is only in its infancy and no definite results are yet available. It is believed, however, that the same general principles which have been effective in the improvement of other crops will apply in the case of these.

In the above crops only the work which is of immediate practical application has been mentioned. Many other questions are being investigated as, for example, the relation between various physical characters and the yielding capacity of the plant; the occurrence of natural crossings in normally self-pollinated plants; the effect of poor and fertile soil and different conditions of moisture, light and heat upon the growth of plants and the inheritance of such variations as may be caused; the possibility of producing new forms by external stimulus, such as the injection of chemicals; the variability produced by hybridization; the relation between root development and the productive power of plants.

Liberty Hyde Bailey, Senior

LIBERTY H. Bailey, father of Dean L. H. Bailey of the New York State College of Agriculture, died at his home in South Haven on January 16th, at the age of ninety-two. The history of his deep, rich, far-reaching life would cover many pages. Something of his personality, strong and positive, may be presented briefly.

In Mr. Bailey's presence one was always conscious of his splendid physique and dominant spirit, of his fitness for leadership. He was tall, rugged, powerful, keen, restless—characteristics that made possible the pioneer who was to help transform a wilderness into a progressive, thriving section of the middle west.

Both friend and stranger recognized that Mr. Bailey was a man of much reserve; but the spontaneity that could not always be controlled occasionally revealed the depth and tenderness of his soul. He was a silent man always, but when he spoke his words carried weight. He terminated many a rambling discussion in a short decisive way. He was well able, however, to give that silent companionship which was so full of meaning to all who understood it.

Mr. Bailey showed very marked public spirit. He had the creative mind and decision of character that enabled him to promote and develop many interests in his community. He made contributions to the press; took an interest in the school children, and in the young men and women of his neighborhood; labored ceaselessly in the interest of Masonry that others might find the personal growth through the organization that he had found; and stood positively and fearlessly for the democratic party.

Mr. Bailey did much to promote civic pride in his home town. He encouraged the planting of trees and on one occasion offered to give trees for arbor day to school children making request for them. He expected to be asked for a few only, but when the call came for several hundred he made good his offer. At this time he was past eighty years of age. Bailey Avenue, well known to all living in the neighborhood of South Haven, has two rows of stately maples extending a quarter of a mile along the highway, which were planted by Mr. Bailey when he first established his home sixty years ago. It is a fitting memorial of the man, dignified and enduring.

With reverent spirit one contemplates this man's life. Bravely starting out in young manhood to find life and having found it, giving of it generously and wisely for over half a century; meeting responsibility to home and family, to community and to state; such was Mr. Bailey's contribution to the world, and we who knew him do not wonder that with cheerful heart he was, to use his own words: "Ready and waiting to cross the Great River."  

A. G. McC.
MAN should be ever striving to better his condition. A dangerous point has been reached in the life of any individual, of any community or of the nation itself, when such an individual, community or nation sits back and says "I am satisfied."

The law applies to New York State fruit-growers. When we think there is nothing new for us—that we have reached the very pinnacle of perfection in our methods of growing fruits and in harvesting and putting them on the market, just so soon are we opening wide the gates to permit someone else to out-distance us. We must be awake to the conditions, both to strengthen still more our strong points, and to replace our weak points with stronger and more up-to-date ones.

Cooperative fruit marketing is an established fact. It is no idle whim of some theorist. It is so well established and the principles on which it is based are so clear cut and well understood that it is well within the bounds to say that any community where cooperation is not practiced is backward to that extent. I feel safe in saying also, and doubt if anyone will question the statement, that any locality now without cooperation will be improved by the development of a good cooperative organization. This improvement will be along financial lines—the farmers will make more money—but it will not stop there alone. Social conditions will be improved. Better schools will be maintained. Libraries, reading-rooms, etc. will be established: in other words, there will be better rural conditions. The farm will be more attractive, and the farmer boys will stay there and the city fellows will want to come there to live.

The purpose of this paper is first of all to stimulate a desire on the part of you fruit-growers of New York to know more about co-operation. In the second place I hope we may discover some of the principles which underlie successful cooperation. Looking at the reverse side we may see some causes for failure. In the last place we shall try to point out what we fruit-growers here need and how these ends may be accomplished.

Cooperative fruit handling has reached its highest type in several of the western states. This is not because it happened so, but the growth there has been based on certain well defined principles. Many of the circumstances which encouraged the development of cooperation in the West are not present here in the East, so we would not expect this early development to take place here. As early as 1899 a western author writing upon the subject of the farmer as a cooperator says:

"Cooperative business is increasing yearly from natural causes. It is well, therefore, to understand precisely what it is.

Cooperation is the union of those of like interests for the purpose of more effectively competing with those of adverse interests. The simplest cooperative enterprises are those for the sale of products of their members. The fundamental idea of marketing societies is the highest attainable prices for their products."

The above quotation strongly implies at least that cooperation was first developed in order to compete with those interests which to a greater or less degree were competitive. To a certain extent of course this is true. But the history of cooperation in this country shows that in a great measure, farmers have united in order to overcome circumstances as well as to co-
pete with other interests. Thus, we find the farmers of Southern California uniting in a cooperative movement to bring in water for irrigation purposes long before they unite to sell their products. Then, too, their great distance from the large markets of the country, practically compel a united movement in marketing their fruit, since it was almost a hopeless thing for a grower of any small or medium acreage to try to market his fruit when he was 3000 miles away from his buyer.

From the very nature of events cooperation was forced upon the growers of California and other Western States. We used to have a little saying in our office at the Department of Agriculture in Washington, which at first seems rather strange and yet as you think of it the truth of it appeals to you more and more. I give it to you: "In the end a section or district is fortunate in proportion to its natural disadvantages." Thus the deserts of Arizona and California, which by nature are waste places, come to be almost gardens of Eden when the irrigation waters are turned upon them. With the ditches full of water, the fruit-grower of that section is almost independent of the rainfall. He waters his crops when they need it, and withholds the waters as he wishes. So the long distances, which lie between the West and the East with corresponding large freight charges, almost compel good methods of packing, for what shipper can afford to run the risk of forwarding fruit poorly packed. So, again, these very phases; these natural conditions, which in the beginning were counted great discouragements, have all united more or less to bring about the great cooperative organizations to which the Western States may well afford to point with pride.

These things, however, do not entirely account for this cooperative movement. There are two other factors at least which have had great weight in developing and greatly encouraging the movements in the West. Fruit-growing there is a highly specialized industry. When once water has been brought to a locality, and the heavy expenditure of money made, it puts a price or valuation upon every acre of land, irrigated by that canal, which almost compels intensive farming. No man can afford to allow his ground to lie idle or produce half a crop. The result has been certain districts, more or less independent of each other, have become almost entirely devoted to the growing of a certain crop. Hence, we have the Riverside District or the Redlands District, with pretty much every farmer growing citrus fruit—oranges or lemons. Here, there is thus a community interest. They must stand or fall together. Ideal conditions, as you see, for cooperation to start and thrive.

Here in the East, farming is more general. Fruit-growing is but an incident in the life of the farmer. It is only occasionally and this but recently, that we find a locality here where even most of the farmers are interested in the same crop. It is diversified farming—not good conditions to develop cooperation.

There remains at least one other factor which has had a great weight in the development of cooperation in fruit handling—the type of man who grows the fruit. For years back men from the East have been going West. For reasons which may be hard to analyze, some in almost every locality went and some remained behind. The very fact that a man went West indicated that in some way he was different than the fellow who stayed East. Wasn't it the man who was attached to the old home ways and home things who usually stayed? Didn't the boy who easily mixed and mingled with the others, the boy who was progressive, ready to try something new usually end up by going out west—to Michigan, Illinois, Iowa, Kansas and then on across the mountains to California. Wouldn't this process carried on for a couple of generations tend to leave behind here on the eastern farms a type of farmer with extreme conservative tendencies. I am not finding fault with him. He probably was
more of a balance wheel for the country than the ones who went west. But really can't you see how from the very nature of events, you couldn't expect our eastern farmers to develop cooperation ahead of the western fruit-grower? This distinction between the eastern and western fruit-grower became more marked a few years ago, when it became a popular thing for the rich men of the eastern cities to go west to invest in fruit lands. The attractive climate, the healthfulness, that strange something about owning an orange grove, lead many men, who were successful in business here to invest money there and go there to live. These men were trained in cooperative methods. They understood the value of cooperation and they became the leaders in uniting the fruit growers.

I have dwelt long on this introductory part; but right here lie many of the principles of successful cooperation.

**There Must Be Some Common Ground of Need.**

If everybody is satisfied, they are pretty willing to leave things as they are. Let good enough alone as it were. This isn't saying that things might not be improved by a change. But it is difficult to bring about any change unless there is some discontent.

The orange growers of California about 1890, were up against a difficult situation. Their groves had come into bearing, but their real markets were here in the East. It is true that buyers and commission men went out and bought their fruit, but the prices were so low or the consignments gave such poor returns, that after paying the charges for harvesting, packing and shipping, little, if anything, was left. It was not an uncommon thing even for the shippers to have to advance money to pay the freight. Probably many of the buyers and handers were dishonest men, but even if they had not been, it would not have been possible to handle their crops at satisfactory prices. There was poor distribution by this method. Probably the city of Rochester didn't have a buyer in California, and it is doubtful if any commission house here was receiving many carload shipments. The same was true of hundreds of places of this size and smaller. The same thing has been true in Florida in much more recent years. With thousands of buyers and solicitors in the state, and practically all of them from just a few large cities, it was impossible to get wide distribution. Let the price of oranges go up to 25c per box in Philadelphia and a hundred cars might be shipped to that point the following day, with what success you can easily guess.

So about 1890, we find a common ground of need in California for a cooperative organization among the orange men. Prices were not satisfactory, so there was formed at a little suburb of Riverside the Pachappa Fruit Association. The original idea was a compact among the growers to hold their fruit until all sold at one time. They found this was unsatisfactory, so afterwards they undertook their own shipping. The attempt was a failure. It failed largely because of one thing, namely, the association was not an incorporated body.

**The Association Must Be an Incorporated Body**

After several unsuccessful attempts to unite the orange growers a mass meeting was held in March, 1893, at the village of Colton. Here was outlined a place of a fully incorporated organization. It was the beginning of success. From this small beginning there has grown an organization with over 5000 members which distributes from 10 to 15 million dollars worth of fruit a year, and in five years has handled for the farmers of southern California the immense sum of 50 million dollars with a loss less than five thousand dollars from uncollected debts; a record which probably cannot be equalled by the Standard Oil Company, the Steel Trust, or any other organization handling that sum of money. We may well afford to take off our hats to such a bunch of fruit-growers.

*(To be concluded in April number.)*
BACTERIOLOGICAL ANALYSIS OF MARKET MILK

By W. A. Stocking
Professor of Dairy Industry at Cornell University

Our knowledge of the rôle which bacteria play in the various fermentation changes which take place in milk began in 1860, when Pasteur showed that certain forms of bacteria were associated with the common phenomenon of the souring of milk. For some years following this discovery but little attempt was made either in this country or abroad to go further into the field to which Pasteur had opened the door. This was doubtless chiefly due to the very unsatisfactory methods then known for the study of these minute forms of life, and it was not until the discovery by Robert Kock in 1881, of the method of plating into solid media that the way was really prepared for a study of the relation of bacteria to the changes occurring in market milk. Up to this time bacteria had been studied in liquid media only, and it was not possible to determine the number of organisms in any given substance. Kock's discovery made it possible to determine, at least approximately, the number of organisms present in any lot of milk, and also to get certain data regarding the species, which formerly could not be obtained. The first attempt to study the bacteria in market milk appears to have been in 1885 when Von Geuns studied several lots of milk sold in Amsterdam and reported the number of bacteria found per cubic centimeter. This was followed in 1888, and 1889, by Clauss who made bacteria counts of eight samples of milk sold in Würtzburg. He found that the different lots of milk varied in bacteria content between about 200,000 and over 3,000,000 per cubic centimeter. Cnof in 1889, and Renk, in 1891, also made counts of milk sold in Münich and Halle. In some of the latter samples the number of bacteria were found to run as high as 30,000,000 per cubic centimeter.

In this country investigations in dairy bacteriology began with the work of Conn in 1897, and the first effort to study the bacterial content of city milk appears to have been in 1891, when Park made bacteria counts of the milk sold in New York City. The next year Sedgwick made similar studies of the Boston milk supply. This was followed by similar work by Frye in Buffalo in 1896, and by Goler in Rochester in 1899. These early examinations of the city milk revealed the fact that the sanitary quality of milk coming to the city was not always what might be desired. The very high numbers of bacteria found was a great surprise to these early workers, and in view of the importance of milk as a food, especially for young children, it was believed high numbers of bacteria were undesirable. It was also believed that they indicated unsanitary conditions and lack of proper care in the production and handling of the milk. Out of this early work has grown our present country-wide movement for a cleaner, more sanitary milk supply.

The methods used for the bacteriological analysis of milk vary widely in different places both as to the technique employed and the interpretation of the results obtained. This is natural in any new line of scientific work. In some places the sanitary quality of the milk is judged on the total number of organisms present, while in others the total count is not considered important but the species present are regarded of the greatest significance. In still other places the milk is judged both on the basis of the total count and the different species or types of organisms present. It is believed that the number of bacteria present in any given lot of milk is a fairly accurate index of the conditions and care under which the milk has been produced and handled.
while the presence or absence of certain groups or species indicate the occurrence or freedom from certain pathological conditions in the cows producing the milk. During the past few years much valuable work has been done on methods for bacteriological analysis of milk and those now in use are rapidly becoming standardized.

In some cities a definite numerical limit has been set (as for example, 500,000 per c. c.) and an attempt is made to exclude from sale, milk showing a higher bacteria count. In other places an effort is made to improve the general supply by grading up the poorest supplies as rapidly as existing conditions will permit.

There is still some difference of opinion among dairy bacteriologists regarding the value of bacteria standards for milk. The germ content in any given milk is dependent chiefly upon three factors; its initial contamination or the number of organisms getting into the milk at the time of production; the temperature at which the milk is kept; and the age of the milk when the analysis is made. A high count may be the result of any one of these conditions or a combination of two or more of them. If milk contains a large number of bacteria, it indicates that there has either been carelessness in its production, giving it a high initial contamination, or the original organisms have been allowed to grow, either as a result of too high temperature or of age. On the other hand if milk contains a small number of organisms, it shows that the number getting in at the outset was small and sanitary conditions were therefore good; also that it has been held at proper temperatures to prevent their rapid development.

While the germ content of milk may be considered as a general index to the sanitary care it has received, it may not always indicate its wholesomeness for high counts may result from the very rapid growth of the lactic acid bacteria, in which case the milk may be perfectly good and wholesome while in another sample, having a much smaller number of organisms, there might be certain pathogenic species which would make the milk decidedly dangerous. The sanitary conditions of production and handling may be indicated by the total bacteria count, but in interpreting the results of such analysis great care should be used in order to guard against errors. The bacteria count has its value but at the same time its limitations.

Under some conditions a direct microscopic examination of the organisms found in milk is of much value in determining its wholesomeness, since in this way certain types of organisms, such as pus streptococci and members of the Bacillus coli group, leucocytes, etc., may be recognized. The presence and relative numbers of these different groups serves to indicate the existence of certain forms of disease in the cows which produce the milk.

There is a strong tendency at the present time to combine the plating and direct microscopic methods for bacteriological analysis of market milk, and such results in the hands of a careful worker are of great practical value in controlling the quality of a city's milk supply.

The practical value of this work is well shown in the decreased sickness and mortality, especially among the children in the cities where the milk supply is under careful bacteriological control.
The American farmer is a busy man. No man who is not a farmer realizes the full truth of this statement. The duties he owes to his family and his farm leave him little time or inclination to consider the duties he owes to his fellow farmers and to the community at large. But no man has a right to shirk these duties. They may vary with time and circumstances but they are ever present and ever offering their opportunity for service and usefulness—that service which alone measures true success in life.

It may often be the duty of the farmer to cooperate with his fellow farmers in the business management of the farm, in buying and selling, in the ownership of improved sires or expensive equipment and in farmer's cooperative organizations. There always lies before him the duty of interesting himself in questions of public policy in the problem of good roads, of rural trolleys, in farm telephones and similar matters of public welfare. His interest in good roads should not limit itself to urging appropriations for state roads at great expense and unnecessary waste of public funds. These roads as now built cost too much money, benefit too little farm property, and what is of greater importance, are too short-lived and far too expensive to maintain. When the road is completed, the expense is only begun. If the road problem is to be solved in a way to be of most service to the farmer, it must be done in a way which will improve roads at less expense with better returns for the outlay.

This suggests the matter of more business-like expenditures of public funds in all lines. Unfortunately men have grown accustomed to a different standard of business methods and even of morality in public affairs from that demanded in private affairs. The burden of taxation on farm property grows more heavy as the years pass, and the farmer has reason to feel that he does not receive the just equivalent for his money. Every man should make his influence felt for greater economy of administration of public affairs not in the niggardly sense of refusing to spend money where it is needed but in the way of demanding a better return for what is used.

What shall be the future of the American farmer? Many have asked this question but none can answer with authority. Future history alone can tell. The outcome will depend on many things. First among these will be the financial returns which the American farm can be made to produce. Unless these returns are sufficient to afford the conditions needed for a life of intelligence and usefulness it is idle to hope for a future farmer of high ideals and noble aims. Hence the wisdom of all agencies which make for better and more profitable farming. The farmer must be able to command all the reasonable comforts of life with sufficient leisure to furnish normal mental activity, if he is to take the place he ought to take in the future of our nation. The social and intellectual life of the country must be such as to appeal to young men and women of intelligence and character if the drain upon the best life of the country to supply the needs of the city is ever to be stemmed. Economic laws will prevail here as in other things.

It is idle to seek to keep young men and women on the farm if other callings offer substantially better inducements —inducements which are genuine and not deceptive. It is further unwise to keep young men and women on the farm in large numbers if the economic balance demands their services elsewhere.

As the future of the American farmer depends on financial returns, the home life, social life and the intel-
lectual life which the farm is able to offer, so are these dependent in turn upon the influence of other agencies chief among which are the home, the school and the church. The future of your child and of mine is determined far more by the atmosphere of the home of the child than by any other agency. Dollars are needed to make the ideal home but they are the least important factor in it. The attitude of the parents and the influences at work in that home outweigh all other considerations. But the influence of the school will count for much. So long as that school disregards the things of the home and the farm, so long as the influence of the teacher and the text points in other directions, whether consciously or unconsciously so long will the rural school fail in its duty to rightly shape the future of the American farmer. The church, too, is learning that it has a part to play in the solution of this great problem. It is coming to lay more stress upon teaching men how to live and less upon fitting them to die. If the American farmer of the future is to be the man he should be, he must be a successful farmer, a man of intellect, and a man of character. The country church should give him help in trying to become all these things. It should interest itself in the problem of better farming as well as in the problem of better living. Upon the educated farmer more than others, because of his better training, rest the duties to the farming community and to the commonwealth. Likewise to him swings wide the door of opportunity for usefulness and service in things outside, as well as inside the farmyard gate.

HORSE RAISING IN NEW YORK

By J. C. Otis, '12

ANY farmer visiting one of our large cities for the first time cannot fail to be impressed with the great number and variety of horses which he sees on the streets. If he visits the horse markets of New York or Buffalo, where hundreds of horses pass under the auctioneer's hammer daily, he will be even more impressed. He may wonder where all these horses came from and where they are going. If he inquires, he will find that they did not come from New York. They are shipped in by the carload from the Central West and their production nets those who raise them a handsome profit. The questions naturally arise: Why are not these horses produced in New York State? Why cannot the New York farmer reap some of this profit as well as the farmer of the Central West?

It is true that some horses are produced in this state but few of them ever reach the big city markets. The majority remain on the farms. The reason for this is apparent when we consider the type of horses which the market demands and the type of our home grown horses. Of 17,000 head that passed thru one of the large markets a few years ago, 15% weighed less than 1200 lbs., 15% weighed more than 1500 lbs., leaving 70% weighing between 1200 and 1500 lbs. From these figures we see that the market demands horses weighing between 1200 and 1500 lbs. and containing considerable draft blood. Of course there is always a limited demand for coach and driving horses but this type are used mostly for park driving by wealthy people, so only horses of first class merit will find a sale. Now if we look at the common horse stock of the state we will be impressed with the prevalence of trotting blood in them. To be sure we produce some very good horses, but the great majority are little animals, without speed enough for race horses, style enough for coach horses, or weight enough for draft horses. With the increased use of heavy machinery, they are not large enough for the most
efficient use on the farms and it is difficult to dispose of them at profitable prices. They may do very well to pull the grocer’s wagon but it is not a profitable enterprise to raise horses for that purpose.

In horses as in everything else, it is the lower grades which first suffer from over-production. First-class horses will always bring good prices because they are always scarce. A few years ago when there was a great over supply of horses, the price of those of only average quality fell very low but the price of first-class horses was not appreciably affected.

Not many years ago we were told that we would soon be living in a horseless age. As a matter of fact there are now more horses in the United States than ever before, and the value per head is greater. Since 1909, the value per head has increased $12.55, and the number has increased from 10,747,000 in 1907, to 21,040,000 in 1910. Of these 750,000 are in New York State. On Jan. 1, 1911, the total value of horses in the United States was $2,276,363,000 and in New York State over $81,500,000. A comparison of the total value of horses with that of the combined value of cattle, sheep and swine is significant. In the United States the total value of cattle, sheep and swine is $2,113,600,000 —$162,763,000 less than the value of horses alone. Evidently the horse is still a factor to be reckoned with in the wealth of the nation. It is safe to say that in our time at least, the heavy draft horses will never be driven from the city streets and the farms, or the coach and driving horses from the city parks. No one then need fear an over-production of first-class horses.

Now is there any reason why New York State cannot profitably produce horses of this type? If we study the conditions we find that New York is particularly well adapted for horse raising. The blue grass pastures of Kentucky are famous the world over for the high grade of horses which they produce, but we are told that Kentucky Blue Grass might just as appropriately have been named New York Blue Grass and that in most parts of the state we can have as good blue grass pastures as are found anywhere in Kentucky.

If we study the famous horse-producing sections of the old world
such as the Clydesdale region in Scotland or La Perche, the home of the Percheron breed in France, we will find that they are localities with a cool, moist climate and a stony or calcareous soil. A cool climate with fairly high altitude seems to be necessary for the proper lung development, so necessary in the horse. We have these conditions in New York State. The invigorating effect of our climate is seen in the greater hardihood of our native horses as compared with those shipped into the state.

The soil is no less important than the climate in producing high quality horses. Western horses, grown on the soft plains are greatly troubled with hoof ailments when brought to the cities. On the other hand, colts which have run all their lives over our stony eastern pastures develop hoofs better able to stand the wear and tear on the hard pavements. Besides this mechanical effect on the hoofs of the horse, the soil is very important in the relation that it bears to the mineral content of the plants which the horse eats and the water which he drinks. A calcareous soil is very necessary to the proper bone development. The soil in many parts of the state is calcareous and in nearly all parts of the state there is enough limestone in the sub-soil and underlying rock to make the well water sufficiently rich in lime.

The nearness to the great horse markets is another great advantage to the New York horse raiser. The cost of transportation is less and there is less danger of loss in shipping a short distance. Many valuable horses are lost or injured in making the long trips from the West. Furthermore, all Western horses have to become accustomed to our climate and are often sick and feverish for a long time after reaching their destination. With New York grown horses this risk is cut out.

The cheapness of much of our land is also an important point to be considered. The price of land in the Central West is much higher than in New York. This gives us an advantage. If we can get the same price for our horses, the interest on our money invested in land will necessarily be greater.

With all these natural advantages it will pay the farmers of New York State to make use of them. We have all the requirements for a successful horse raising country. A little effort on the part of the farmers could make of New York State a horse raising region famous the world over.
FARM EFFICIENCY

By James G. Dudley
Consulting Engineer, New York City

[Editor's Note.—We are glad to be able to publish from the urban viewpoint a few ideas regarding the organization of the rural population in order that they may meet successfully the well organized urban population.]

BACK to the farm! is now a recognized national slogan for Uncle Sam and to the student of economics it is full of vital and vitalizing significance. Undoubtedly the scientific agriculturist long ago realized much, if not all that is therein implied. To reach the sentient ear of the man in the street, however, required the sense-compelling voice of such a one as Theodore Roosevelt. Ably supplementing the patriotic advice of our ex-president we have for years heard from the peaks of the Rocky Mountain quite as trenchant words backed by amazing statistics from an equally typical and vigorous American, James J. Hill.

History, ancient and modern, is full to overflowing with unanswerable data as to the dire results which come to the peoples who neglect the soil from which all wealth flows. Contrawise, but little study is needed to disclose the secret of vigorous and enduring national life for all those peoples who are closely attached to the soil. Coincident with this awakening of ours as to the need of increasing crop average, there has been blazoned forth another beacon to urge and lure us on and that is—efficiency. Just as a Hill or a Roosevelt was necessary to concentrate the minds of the multitude upon the faults, the advantages and the potentialities of the farm, so there was lacking for many years, a voice and an incident of such far reaching force as would quicken into action the hidden or slumbering thoughts of the nation on this very question of efficiency in every act and walk of life from the plow to the pulpit. Such a voice and incident challenged public attention when lawyer Louis D. Brandeis of Boston appearing in behalf of the shippers before the Interstate Commerce Commission charged and admittedly proved on the authority of Harrington Emmerson and other efficiency engineers that the railroads of the country by the application of scientific management could effect economies in excess of a million dollars per diem. If, then, we are constrained and adjured to turn our economic steps again toward the farm, no less certainly and insistently must we efficiently proceed there, produce there, and distribute from there the fruits of the soil which constitute the very bones and sinews of our country.

The fact is now pretty well recognized in the world of manufacture, trade, transportation and even finance that the day of small scale business and even of competitive business is rapidly passing away and it may not be amiss for the scientific agriculturalist to at least take a survey of the conditions which now obtain and which within a limited period of our national life, are bound or at the very least are liable to obtain upon the farm. Never in the world's history could it be more truly said no man lives or can live, to himself alone. In all our doings and dealings we are so intimately and inextricably bound together that speaking within reason, no longer does one spin for himself alone but he is, as it were, merely one of the countless spindles in the Gargantian loom of our national life.

The obvious function of the agricultural educational institution is to transmit to the rising generation the crystallized and selected and specialized knowledge concerning the farm which their elders have culled from the centuries. To see that this "vade mecum" for the farmer has assumed most imposing proportions already, one has merely to glance at the array of departments of instruction conducted under the Directorship of Dean Bailey of the New York State College.
of Agriculture at Cornell University. The budding agriculturalist is trained in almost every branch of agricultural activity. Clearly it would be little short of folly for the specialist, however highly trained in other walks of life to offer to the scientific offspring of Dean Bailey, et al, mental pabulum, however digested or technical, concerning the esoteric Buddhism of raising hay or chickens, for, evidently, the resultant efficiency of the man behind the hoe is now or must hereafter be of a very high order.

The industrial efficiency of Harrington Emmerson, Frederick W. Taylor and their followers, like charity is an all embracing term which, when sifted down into library parlance, might be specified as "attainable perfection." Perfection or 100% industrial efficiency, man will never attain. Yet our Doctor of the Farm might grow seedless pippins which tempt all the sons of Adam to violate hitherto unviolated decalogues of the Doctors of Medicine, yet fall far short of the individual and collective efficiency which they must attain if we of this day and generation are to solve the grave economic problems which the moving picture machine of the daily press is projecting on the curtain of our attention. Efficiency on the farm must not and cannot be satisfied with mere technical successes but the infusion into its work of a broad patriotic spirit, will go far toward solving the problems which are common to the whole people.

Just as all wealth is produced solely from the soil by the sweat of man's brow, so its consumption or enjoyment inevitably involves distribution and exchange which clearly at present are outside the agriculturalist's domain, yet are so intimately bound up in the warp and woof of our every day life that the price of eggs—without a too great stretch of economic imagination might yet produce a panic. In the very nature of things, the farm and farmer of yesterday represented the quintessence of individualism. The orchard and the pomologist of the new era are and must be frictionless cogs in the great industrial mechanism of America if she is to keep step with progress, if she is to feed efficiently and equitably her teeming millions and if she is to hold high her head in the court of commerce of the world's best nations.

It will scarcely be questioned that the work of the farm tomorrow will chiefly be performed by mechanical power at least if profits and efficiency are to be secured. The self interest of the farmer is self preservation which translated into work-a-day language is the production of profits or the earning of wages or salary or the maintenance of self and family and farm. The farm of tomorrow (to be efficient, to be profitable) must have ample capital to conduct it in common with the bulk of other commercial and manufacturing industries. The transportation of farm products demands efficient highways both on the farm and to the railroads. The agriculturalist must jointly or severally or through the county, state or nation procure such highways or let bumper crops rot on the ground while millions clamor for them a hundred miles away. When transported to the shipping destination the products of the farm must be distributed to the ultimate consumer profitably to the shipper and efficiently—quickly and economically—to the buyer. That this is scarcely the case today can be seen in the fact that of every dollar paid by the ultimate consumer, the farmer receives less than one-half. The Grange associations, joint stock companies, cooperative societies, common markets and kindred organizations into which the farmer may weld and merge his individuality without losing it (just as do other producers), unmistakably point the way to the goal of high efficiency on the farm—and not otherwise.

Let the rising generation delve into modern economies as deeply as he does into soil technology and he should then be able to adjust himself and his interests to the tidal industrial forces all about him which evidently he at present ignores or fails utterly to comprehend.
AQUATIC FARMING

By Wallace H. Hook, '12

LIMNOLOGY is the study of water biology and includes all aquatic life, animal organisms from whales to paramoeciums and vegetative life from the largest plant down to the smallest algae. Let us take up briefly an economic side of limnology which may be termed aquatic farming and which will deal with commercial fish raising, not with the idea of telling how to produce fish commercially with a profit, for that has not yet been determined, but to give an idea of what progress has been made in regard to a coming industry.

The hatching of fish has been worked down to a comparatively easy science. Most of the fish may be stripped of their spawn and those which do not yield their eggs to this operation can be induced to lay the spawn where it may be easily gathered. The great question now to be solved is the feeding of the fish. The method now used is to throw into the fish pond quantities of ground liver, not the natural food of the fish but an artificial substitute. This is not profitable. Moreover, it is taking from the land to feed the water, when in truth the water is a great deal more productive. Therefore, the effort which has been and is being made is to produce the natural food of the fish in the water in such quantities that a great many fish may flourish where a few now survive.

This work should have been carried on by the Fish Commission but up to the present they have been satisfied with hatching fry and dumping them in large numbers into the lakes and streams, a proceeding as foolish as turning 100 cows into a one acre lot and expect them all to subsist on the scant supply of food. It is small wonder that the fish become cannibals and the big ones eat up the little ones. But the credit for the advancement made thus far is almost entirely due to the Limnology Branch of the Entomological Department under Dr. Needham and Mr. Embody with the aid of a few personal workers.

The first thing that these workers determined was the diet of the fish. We may watch a cow eat hay, grass, corn-fodder and a mixed grain ration and know that these substances form a large part of the diet of all cows but we cannot watch a fish eat in the wild state. It is necessary to catch the fish and identify the contents of their stomachs. This has been done so that now the chief articles of diet of some of the important varieties is known.

The species examined were found to be almost entirely carnivorous. Therefore, the abundance of small aquatic plants and vegetative organisms in the shoal waters of our lakes and streams is of little direct value as food for the fish. However, the investigators determined that the fish devours as food certain aquatic animal organisms which do use the small aquatic plants as food. Here we have two important discoveries. First, that the fish is a carnivorous animal, second, that the carnivorous fish feeds on the small aquatic animal organisms which in turn feed on the easily produced supply of vegetable organisms.

The next step was to select from the countless number of small aquatic animal organisms those which were most valuable as food for fish, which reproduced in the largest numbers, which matured rapidly, whose production was most continuous and which in a measure could be domesticated. After extensive searching and tireless experimenting, from the countless number of aquatic organisms a few important kinds were sifted out among which two kinds have been given special attention as promising food for fish. They are the fresh water shrimps and the larva of one of the mayflies. Of the two the mayfly larva is the most promising. The single adult mayfly lays about 1000 eggs at a time and a complete generation matures in from
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March, 1912

The Action of the Students' Association

The support and appreciation which the students and alumni of the College would give to Dean Bailey in his efforts directed toward the betterment of country life and in his work of reorganization of the College of Agriculture, were manifested by a set of resolutions unanimously adopted by the Students' Association at its annual meeting, February 21, 1912. The resolutions are as follows:

"Whereas, agricultural education is growing rapidly through many agencies, the effectiveness of which we think can be increased by the cooperation of former students of the College of Agriculture;

"And whereas the development of agricultural education in this country has had the faithful service, impartial counsel, and unequaled leadership of that foremost agricultural educator, our own Director Bailey;

"And whereas Director Bailey has stated that he will remain without reservation to help work out the new administrative plans for the College and the educational policies that necessarily are to establish themselves on these plans, and that he wishes that the Agricultural Council, Faculty, Alumni, and others might determine when such plans are in effective operation.

"Be it resolved,

"First, that we, the former students of the New York State College of Agriculture, individually and collectively will aid the extension of agricultural education by furthering the introduction of agriculture into rural schools and high schools, and by aiding in the establishment of extension schools, cooperative experiments, and farm demonstrations.

"Second, that we pledge to Director Bailey our earnest cooperation in the solution of these educational and administrative problems.

"Third, that this progress can be best effected by the gradual organization of local or county units.

"Fourth, that a committee of twenty-five, with power, representative of the United States as to location and the College as to course and class, be appointed by the President of this Association with the approval of the Executive Committee, whose duty it shall be to cooperate with Director Bailey in the development of the College of Agriculture and in the promotion of agricultural education.

"Fifth, that we commend the plan proposed by Director Bailey for the administration of the College of Agriculture, and that we express to the Trustees of Cornell University our gratification at their unanimous adoption of the plan.

"Sixth, that this action be trans-
mitted to the President of the University, to the Director of the College, to the Trustees, to the former students of the College of Agriculture, and to the press."

This hearty response to the call for unified action and unselfish cooperation in directing the dissemination of agricultural education is most gratifying. It means that the members of the Students' Association, the present and former students of the College, have pledged themselves to unite under the leadership of Dean Bailey in order that the spread of agricultural information may be more rapid and certain. With such a force at work, we see bright prospects for the education of the farmer of to-morrow.

Coöperation

It is a strange fact, that, although the American farmer as a class represents a larger monied interest than any other class of the people in the United States, yet they are, except in a few rare instances, unable to control the prices on either their productive or their consumptive goods. The reason for this, is that to a large extent the farmer acts almost entirely as an individual, whereas the urban population represent a high type of organization and act as a class.

It is even harder to understand why the American Farmers have not organized when we have such splendid examples of successful coöperation among the farmers of Europe in the cooperative societies and the cooperative banks, especially in Germany and Denmark.

The comparatively few examples of coöperation in this country have for the most part been successful and we hope will start the movement going. Most of these societies are in the West, and we wonder how much longer the farmer of the East must ask when selling his products: "What will you give?" and with equal dependence have to ask in buying: "How much do you ask?"

We were specially fortunate in securing for our readers several articles for this number which touch on organization and cooperation.

The Student Room has been a crying need for a student lounging room in the College of Agriculture like the ones in Goldwin Smith and Sibley. The Student Association needed a place to hang its athletic banners and pictures while the men needed a place where they could spend the time between their classes.

This need was first supplied by the seminar room across the hall from the library. As this room was never large enough a larger room was asked for. Until the beginning of this year, there has been no available place. This year, however, Dean Bailey offered the basement laboratory of the pomology department. He also offered to fit it out according to plans submitted by the Association.

A committee was given the work of forming plans and carrying them out. Benches were placed around the walls, two large tables and a good supply of chairs were furnished, and the trophies moved into the room.

At the winter election of officers for the Association a vote was taken on the question of smoking in the new quarters. The students came out with a large majority against smoking.
Now there is abundant room for all who wish to study, read, or rest between classes. The room is also an ideal place for the athletic trophies and pictures. Class and club meetings are being held in the room and there is movement on foot to have some get-together meetings there in the near future.

B. H. Austin, '12

A record crowd of interested visitors gathered at the College of Agriculture to attend the fifth annual Farmers' Week, Feb. 19 to 24, and the capacity of the college was taxed to the utmost to accommodate the guests. The congestion in the main building was increased by the condemnation of the Animal Husbandry Building which was declared unsafe on account of the condition of the roof.

The program of the week was so arranged that a definite and connected line of work could be followed throughout the week, such as lectures and demonstrations on dairying, poultry raising, fruit growing, farm crops, and the like; or a man might devote his attention throughout the entire week to the economic, social and educational questions of rural life. There were over 300 lectures, fifteen exhibits and fifteen conferences, allowing a wide range of choice for visitors.

The program of conference and conventions held during the week was as follows: The New York State Drainage association (Monday, Tuesday); Homemakers' conference (throughout the week); Poultry institute (Tuesday-Friday); Rural Church conference (Tuesday); Students' association of the New York State College of Agriculture (Wednesday); New York State Vegetable Growers' association (Tuesday-Thursday); New York State Plant Breeders' association (Wednesday); Winter Dairy Students' association (Tuesday); Rural Bankers conference (Friday); Rural Editors' conference (Wednesday); Experimenters' league (Thursday); and Rural School Education conference (throughout the week).

Another feature of the week were the exhibits arranged by the various departments. Among these were The Animal Husbandry exhibit; the exhibit of Dairy Industry showing bacteria and their relation to clean milk; the Farm Mechanics exhibit of water systems, lighting plants, spray machinery, and gasoline engines; an exhibit of the home economics department including charts and labor-saving devices; an extensive exhibit showing the improvements of plants by the plant-breeding department; demonstrations and exhibits of plant diseases and insect pests; demonstrations and exhibits relating to floriculture and vegetable culture; an educational exhibit of poultry house appliances, with charts and photographs showing the results of recent investigations; exhibits showing the forms of lime, fertilizer materials, drainage and irrigation systems; exhibit of students' work of the department of Rural Art and drawing.

Parcels Post

Monday, March 18, 1912, is being broadly heralded as Farmers' Parcels Post Letter Day. On this date all the farmers are requested to write to their members of Congress stating their demand for parcels post. Let every reader of the COUNTRYMAN write such a letter and try to persuade your neighbor to write also.
CAMPUS NOTES

CALENDAR

Mon., Mar. 11, Round-Up Club
Lazy Club.
Tues., Mar. 12, Association Meeting.
Mon., Mar. 18, Round-Up Club.
Lazy Club.
Sophomore Ag. Class Meeting.
Lazy Club.
Mon., April 1, Round-Up Club.
Lazy Club.
Wed., April 3, Spring Recess Begins.
Tues., April 9, Instruction Resumed.

* * *

The regular February Assembly was held on Thursday evening, Feb. 15. After the regular opening by singing the “Alma Mater,” musical selections by the Glee Clubs were enjoyed. A powerful and inspiring address by Dean Bailey followed. He discussed the relation of the individual to the world at large, bringing out the fact that the individual must place himself in the right attitude with regard to his fellow men if he is to reach the utmost usefulness. The Dean read a portion of Robert Louis Stevenson’s “Will o’ the Mill,” to illustrate the effect of an over-segregated life. The evening was closed with the singing of the “Evening Song,” after which all remained to join in the usual social hour.

* * *

At the fourteenth annual banquet of the Cornell Club of New England at Boston, Feb. 10, Dean Bailey, the guest of honor, spoke of the University’s future. Byron Satterlee Hul-
continue her work for the doctorate. Miss Fitch is now assistant plant pathologist at Purdue University.

* * *

Professor Fippin of the Department of Agronomy, on Feb. 7, lectured at Columbia University, on "Practical Farm Drainage." This lecture was one of a series of sixteen lectures, given on Wednesday afternoons by some of the most learned men of the country.

* * *

The Juniors held a smoker in Barnes Hall on the evening of February 16th. This is the first time that the Ag. Juniors have ever held such a function and in spite of the fact that a Wrestling Meet and a Masque performance were being held the same evening, the affair was so successful that such a get-together bids fair to become an annual event. The committee in charge deserves much credit for the excellent program which they prepared. Prof. Mann was the table toastmaster; stunts were given by Messrs. Horner, Whitney, Rotstein, Genung and Van Hoesan and Profs. Mulford, Gilbert and Whetzel entertained with talks and stories.

* * *

The Poultry Department has been very active in extension work during the last month. Professors Rice, Trask, Hurd, Krum, Rogers, and others have given numerous stage exhibits and speeches all over the state. Great interest was shown in these meetings.

* * *

Mr. H. J. Sconce, a corn breeder from Illinois, visited the Department of Plant Breeding during February and gave a talk before the Synopsis Club on the 8th of the month.

* * *

Synopsis held its one-hundredth meeting on the evening of February 14. The meeting was held at the home of Dr. Webber and the occasion duly celebrated by an appropriate program.

* * *

Professor Fippin recently wrote an article on "The Agriculture of New York State," which was printed in the March number of the Journal of Geology, published at Madison, Wis.

* * *

The Department of Farm Mechanics recently received a large amount of new equipment, a considerable part of which deals with different kinds of water supply systems.

* * *

Mr. Oliver Wilson, of Peoria, Master of the National Grange, addressed local grangers and undergraduates of the College of Agriculture, Feb. 9.

* * *

Mr. Leighty of the Department of Plant-Breeding attended the Farmers' Institute recently held at the Lincolndale Agricultural School.

* * *

Dr. Gilbert gave several lectures in the Institute School Series during February.

* * *

J. K. Wilson is dividing his time between soil technology and plant physiology.

* * *

R. E. Deuel, '11, instructor in Animal Husbandry, is in charge of the operation of two new vacuum milking machines which were installed recently in the Agricultural Barns. One of these machines will milk two cows at the same time and in about one quarter of the usual time required.

* * *

Professor Fippin in connection with the Western Pennsylvania Farmers' Week of the State College of Agriculture, on March 4th and 5th, lectured on Soil Moisture and Drainage, at Greenville, Pennsylvania.

* * *

Dr. Gilbert spent the first week of February giving talks at Farmers' Institutes on Long Island, speaking at Northport, Bridgehampton, Riverhead and Southhold. He also gave talks at meetings of the rural teachers of Suffolk County under the auspices of the State Department of Education.
The department of bacteriology of the State Experiment Station (Geneva) is now represented at Cornell by two experienced investigators, registered in the Graduate School, M. J. Prucha, fellow in plant physiology, is conducting important investigations relating to the nitrogen-fixing bacteria of legumes.

* * *

The Ag. basketball team closed the season by defeating C. E., on Saturday, Feb. 17. This left the team in the third place for the inter-college basketball series. The line-up was as follows: E. A. Brown, right forward; M. E. Maxon, left forward; N. D. Steve, centre; D. D. Ward, (capt.) right guard; R. F. Steve, left guard; substitutes, T. M. Gray, C. G. Crittenden, J. A. Webb; manager, W. De S. Wilson. The team met Feb. 18, and elected the following officers for the year, 1912-13: Captain, N. D. Steve; manager, J. S. Clark.

BASKET BALL TEAM, 1911-12.
FORMER STUDENTS

MAURICE CHASE BURRITT.

'08, B. S. A.; '10, M. S. A.—Maurice Chase Burritt was born and reared on a farm at Hilton, Monroe County, New York. He received his early education at the Hilton High School, and at Genesee Wesleyan Seminary at Lima, graduating from the latter institution in 1902. He early determined to seek an agricultural education at Cornell, but owing to the death of his father when he was quite young, the management of the home farm devolved on him. After his graduation from preparatory school therefore, he spent two years reorganizing the farm, getting it into profitable enough operation to provide for his college education.

Entering Cornell in 1904, he graduated in 1908. While in college he was connected with many student activities, being a member of Hebs-Sa, President of the Agricultural Association one term, and Alumni Editor of THE CORNELL COUNTRYMAN in his senior year. He was also a student assistant in “Farm Crops” during his last term, and is the author of Cornell Bulletin 271, “The Incomes of 178 New York Farms.”

After graduation he assisted in making an Orchard Survey of Monroe County. On September, 1908, he entered the Office of Farm Management, in the United States Department of Agriculture as a Scientific Assistant in Farm Management. For three years he was engaged in “district” field work mostly in New York and the New England States, being promoted to Assistant Agriculturalist in 1910. He has written several bulletins, two of which “Agricultural Conditions in Southern New York,” and “A Successful New York Farm,” are published, the others not yet being in print.

During the winters of 1909–10 and 1910–11, Mr. Burritt taught the Short Course in “Commercial Fruit Growing” at Cornell.

In October, 1911, Mr. Burritt resigned from the Department to become editor of the New York Tribune Farmer at New York City in which work he is now engaged.

He has just completed a book on "The Farm Apple Orchard" which will soon be issued by the Outing Publishing Company.

Mr. Burritt still owns the home farm, “Beechwood” which he operates at long range through a manager and in which he is very much interested. He has always looked forward to returning to it but so far the inducements of a larger field of usefulness have not permitted this, although he has not abandoned the hope of some day settling down there with the orchards he is developing.

On August 9, 1911, he was married to Estella May Buell of Bergen, N. Y.

'94, B. S. A.—Raymond A. Pearson, who resigned the office of Commissioner of Agriculture of the State of New York, last week said in his letter to Governor Dix: “For a long time I have wished to make a study of certain agricultural conditions in Europe, and I have decided to undertake this study at an early date.” In accepting the resignation, the Governor commended
Mr. Pearson for the service he had rendered the State since his appointment in April, 1908, and for his determination to take up the study of agricultural conditions abroad.

'00, Ph.D.—Dr. Judson F. Clark and Pery Lyford, '06, B.S.A., are now associated in the lumber business in Vancouver, British Columbia. They also have an eastern office at Montreal.

'02, B.S.A.—L. H. Moulton, who formerly has been on a farm near Cuba, N. Y., has accepted a position as Superintendent of the College Farms.

'03, W.A.—Hubert D. Gage, of South Berlin, N. Y., is in charge of Governor Dix’s farm near Albany.

'04, F.E.—Louis Margolis who has been in the United States Forestry Service, is now Forest Cruiser with the firm of Clark & Lyford. He is located at Montreal, Canada.

'04, W.A.—C. E. Holloway has resigned his position as superintendent of the Pencoyd Farm, Bala, Pa., and will start in farming for himself. His address is R. D. No. 3, Morristown, Pa.

'05, M.S.A.—C. I. Lewis is chief of the division of horticulture at the Oregon Agricultural College and Experimental Station.

'05, B.S.A.—Robert Dunlop has purchased a farm at Wyebrook, Chester Co., Pa., on which he will put into practice the up-to-date methods he learned while in college.

'06, B.S.A.—F. E. Peck writes from Chattanooga, Tenn., that he has been acting as bacteriologist and chemist for the Hill Dairy Co., located there. After leaving college Mr. Peck taught two years at the Mt. Hermon School, Mass. The two years following he had charge of the certified milk plant of the Fairchild Dairy Co., at Montclair, N. J. He gave up this position to go to Chattanooga, where he has been working in a well-equipped commercial plant. Mr. Peck has recently contributed articles on dairying to some of the leading agricultural papers.

He is also a weekly contributor to one of the local papers. His address is 1117 E. 8th Street, Chattanooga, Tenn.

'07, B.S.A.; '08, M.S.A.—N. H. Grubb is in the Forestry Service of the United States Department of Agriculture. His address is 1939 Biltmore Street, Washington, D. C.

'07, Sp.—Henry Jennings is a soil scientist with the United States Department of Agriculture and at present is located in Gwinnett County, Georgia.

'08, M.S.A.; '09, Ph.D.—J. O. Morgan, formerly professor of agronomy at the Mississippi Agricultural and Mechanical College, has assumed the duties of professor of agronomy at the Texas Agricultural and Mechanical College, College Station, Tex.

'09, B.S.A.—Rolla C. Lawry, manager of the Yesterlaid Egg Company, Pacific, Mo., has recently been married to Miss Estelle Irene Campbell of that place.

'09, B.S.A.—S. F. Willard, Jr., is with Vaughn’s Seed Store, Western Springs, Ill.

'10, B.S.A.—C. C. Vincent who was Assistant in Horticulture in the Idaho Agricultural College has accepted a position in Clemson College, South Carolina.

'10, B. S. A.—F. B. Kelley will go to Clifton Springs, N. Y., on March 15th, to manage a farm recently acquired by his employers, the Jackson & Perkins Company, wholesale nurserymen.

'10, W. A.—Carl J. Taber is foreman of the Otsego County Farm at Phoenix Mills, N. Y.

'10, W. P.—Ford W. Arnold is building up a poultry farm in Otsego County, at West Oneonta, N. Y.

'11, Ph.D.—George Bouyoucos is now connected with the Soils Department at the Michigan Agricultural College.

'11, Ph.D.—F. K. Harris is now Professor of Agronomy at the Utah Agricultural College.
'11, B.S.A.—T. E. Elder was recently a visitor at the college. Mr. Elder is at the head of the agricultural department of the Mt. Hermon Preparatory School, at Mt. Hermon, Mass.

'11, B.S.A.—Joseph Retick is engaged in fruit growing at the Royal Ridge Farm, Front Royal, Virginia. Roy B. Holbrook, '10, and Lawrence Swan, '11, are in partnership with him. "All Cornellians welcome."

'11, W.A.—Henry D. Knight is spending the winter at Palm Beach, Fla., where he is engaged in packing and shipping citrus fruits.

'12, Ph.D.—John Turlington is now Assistant Agronomist at the Georgia Agricultural College.

'12, B.S.A.—Lester A. Polhemus was married to Miss Jessamine Warwick at Brockport, N. Y., on February 6th. He has accepted a position as manager of the Northfield Farm, East Northfield, Mass.

'12, B.S.A.—S. N. Stimson recently accepted a position as farm manager on C. G. A. Whitney's farm, near Albany, N. Y.

'12, Sp. Ex.—D. E. Smith, who had to leave college during the middle of last term on account of poor health is at present at Saranac Lake, N. Y. His many friends here wish him a speedy recovery.

'12, Sp.—R. T. Leader is employed by Charles T. Stout on a 300 acre farm in Connecticut devoted to fruit and stock raising.

'12, W. H.—Ellwood Douglass has a position on a fruit farm owned by Geo. C. Hubbard, at Red Hook, N. Y.

'12, W.A.—Alexander B. Borgeson has accepted a position with the Atlas Portland Cement Co. He will be in charge of between 5,000 and 6,000 acres in New York, New Jersey, Pennsylvania and Missouri. He is located at North Hampton, Pa.

We should like to publish a note for each former student at least once each year. We cannot do this without your cooperation. Will YOU give it?

POSITIONS

[Below are given a few available positions which have come to the College. For further information address Prof. J. L. Stone at this College.]

Farms of 116 acres in Dutchess Co., N. Y., devoted chiefly to dairying. Farm furnished with stock and machinery, also a silo. Will rent on shares or pay a small salary. * * *

Moderate sized farm in Connecticut devoted to dairying, vegetable, and flower gardening (greenhouse). Married man wanted. * * *

Dairy farm of 130 acres, 26 miles from Buffalo, for rent on shares. Silo, ice-house. A married man required. * * *

Country place of 125 acres in Connecticut, 35 miles from New York City. Requires a married man 25 to 40 years old experienced in poultry, cattle, fruit, vegetables, flowers, and lawns. Small greenhouse for starting plants. A working foreman for a moderate sized farm in Chenango Co. Chiefly dairying. Cottage, fowl and milk supplies. * * *

A Pottsville, Pa., gentleman desires a man to work a 40 acre farm and manage a tract of mountain land of some 1200 acres on which it is desired to keep goats for milk for hospitals. About 225 goats are now on the place. Single or married. Man must have had some experience with goats. * * *

Farmer for Home for Children near Philadelphia, Pa. Wife to act as matron. Sixty-eight acres of good land. Inmates 60 children and nine old men. Start at $900 per year with advance of $100 per year for three years. Furnished rooms and board. * * *

Farm for rent on shares, three miles from Canandaigua, N. Y., on trolley line. Adapted to milk business.
The Fertilizer Resources of the United States

The United States possesses the largest phosphate fields in the world and not only supplies all that is required for home consumption but also exports large quantities to foreign countries. All of the potash, however, required for our fertilizers is imported from Germany, the annual importation being about $15,000,000.

Germany has shown a disposition to limit the amount sent to this country and as the use of fertilizers is increasing rapidly, the need for a home supply becomes every year more apparent.

The Department of Agriculture has been investigating the possible sources of potash in this country and now reports this country should shortly not only be able to supply its own needs of potash salts, but even possibly export to foreign markets. A new industry will be established and if the by-products are wisely used many millions per annum should be added to the wealth of this country.

The Department experts have covered a wide range in their investigation. Some of the desert basins were examined; brines and mother liquors from salt wells were tested and experiments were carried on with the object of extracting potash from silicate rocks and minerals, such as alunite, which contain it. The work is still under way and potash in limited amounts undoubtedly will be derived from some of these sources. Up to the present, none of inorganic sources give promise of satisfying the country's needs.

But in the giant kelps of the Pacific Coast a satisfactory source of potash has been found. The kelp groves along less than one-fourth of the coastline have been mapped and yet these should yield from two to three times as much potash as the present importations. These sea weeds are able to extract, by selective absorption, the potash salts from the sea water and on drying, these salts are very largely exuded on the surface. The dried plants contain from 25 to 35 per cent. of their weight of potassium chloride and the latter can very readily be extracted. The kelps also contain iodine and many other by-products can be obtained from them. It is possible that these by-products will pay manufacturing expenses, leaving the potassium chloride free from cost. The Japanese have already shown considerable ingenuity in working up these by-products. Not only do they use some of the waste material for cattle food but the Japanese themselves use it as staple article of diet. Glue, shellac, paper and other useful by-products can also be obtained from this source.

Some of the Pacific groves are five miles long and two miles wide, and the growth in these groves is exceedingly dense. These plants reach a length of 100 feet or more and grow in strong tideways where they are exposed to the full force of the open sea. All of the groves are within the three mile limit and should be easily harvested. If properly harvested and protected these groves will yield an annual harvest indefinitely; it is even possible that in some cases two such harvests may be obtained. On a conservative basis upward of a million tons of potassium chloride worth nearly $40,000,000 should be obtained each year. No estimate can be given at the present time of the value of the by-products.

Desiccated Potatoes

The drying of potatoes is an industry that has reached a high state of development in Germany, which country grows one-third of the world's potato crop. Germany has potato drying plants with a combined yearly capacity of nearly twenty-five million bushels of potatoes. The two general methods of manufacture are known as the roll system and the drum system.

In the roll system the potatoes are steamed until softened, and then passed between large revolving cylinders which are heated by steam. The
potato forms on the roll in a layer, which dries and is scraped off during the revolution of the roll. This product has the appearance of one of our breakfast foods known as "corn flakes" and is used as general substitute for the fresh potato in the household, in addition to being ground to a flour and mixed with other flours for bread making and in the making of cereal foods.

The drum system makes a product at about half the manufacturing cost of the roll system, and is used for all purposes other than human food. It consists essentially, of an iron shell about two and one-half feet in diameter and eight times this length. Through this a heavy current of air is drawn by means of a fan, and the fire gases from a stove feed directly into it, the mixture of heated and cold air being such as to make a temperature of about 60 degrees F. at the entrance. From a cutting machine, chipped potatoes are conveyed to the slowly revolving drum which is provided with an interior construction that gives the potatoes the maximum exposure to the drying action of the hot air. The drying operation must be done on rather a large scale, as small drums are not nearly so efficient in proportion to size. Four tons of potatoes yield one ton of dried product. In Germany, most of the product is used for domestic animals, having about the equivalent value of corn for farm stock. The product, being partially cooked, is most suitable for the manufacture of starch. One of the large manufacturers of machinery, is now trying out a process for making a material that will be suitable for making into finish starch.

It appears that this industry may be applicable to the United States, especially where the question of freight is one of importance for, as seen above, the weight of product is reduced to one-fourth. It should enable our Western States to utilize the advantages they have for potato growing, both as a money crop and as a cultivated crop in the rotation to prepare land for wheat and other grains. Furthermore, the machines could be used for drying sugar beet pulp, beet leaves, and other similar products, as it is in this way the German beet sugar factories conserve their pulp, mixing it with a small quantity of molasses for stock feed, a part of which is exported to the United States.

* * *

A PARCELS POST

It is an established fact that a special parcels post arrangement with our government enables the people of New Zealand to buy articles in the United States and have them delivered to their homes by mail cheaper than we can obtain the same goods from near-by cities by mail. New Zealand has a parcels post; the same is true of several other foreign countries. In other words, the American citizens are supporting a governmental department that is doing a large parcels post business benefitting only the people outside of the United States. We have learned, moreover, that under the supervision of the present postmaster-general the economical and efficient administration of the affairs of his department has turned an annual deficit of $17,000,000 into a surplus of several hundred thousand dollars. We know, too, that the officials of the Post Office Department are struggling over a problem, namely, how to use the best advantage the extra room at the disposal of nearly all the mail carriers in the United States. And yet, the people of the United States cannot have a parcels post. Why? There are four reasons: the Adams Express Company, the Wells Fargo Express Company, the American Express Company, and the United States Express Company. Surely, the criminal prosecution of these companies about to be begun by the Interstate Commerce Commission because of their practice of overcharging the public ought to prepare the way at least for the establishment of a parcels post in the United States.
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VIEW FROM SAGE TOWER SHOWING THE COLLEGE OF AGRICULTURE, THE GREENHOUSES, ALUMNI FIELD AND THE AGRICULTURAL BARNs BEYOND THE FIELD. IN THE FOREGROUND AT THE LEFT IS THE VETERINARY COLLEGE AND TO THE RIGHT THE OBSERVATORY.
THE YOUNG MEN IN THE TWENTIETH CENTURY

By "Uncle" Henry Wallace, Editor of Wallace's Farmer

[Speech delivered before the students of the College, Farmer's Week, 1912.]

I ASSURE you, gentlemen, that it is a great pleasure to me in these opening years of the twentieth century to meet with the student body of one of our great universities. Now this is not a compliment for you, nor is it so intended. I will take you into my confidence this morning by telling you that unless we older fellows keep in constant touch with young people, and accustom ourselves to seeing the world from their standpoint, and keeping fresh and clear the ideas of our own youth by contact with young people whose ideals have not become clouded, we ourselves are certain sooner or later to go into the discard. The human mind is subject to a strange and deadly disease, to which no one has given a name so far as I know, a disease which I think, or at least hope, may be prevented if not cured. The evidence of this disease is that the one affected is incapable of thinking on any new line, and views subjects only from some past standpoint, and thinks clearly only on the old lines to which he has long been accustomed. His brain ceases to add new cells, or if I may use an illustration from plant life, to throw out hair roots in new directions. With him, "Time sanctifies, and what is hoar with age becomes religion." Because of the great respect which youth always shows age, he is tolerated for a while and even given increasing honors, but sooner or later the world is obliged if it progresses at all, to either gently edge these old fellows off the stage, or if they insist on staying, violently eject them. Recent political history will furnish you many illustrations.

It is, therefore, the duty of every man, when his hair begins to whiten, to keep young in spirit and in brain, and the only way yet discovered is by keeping in close touch with younger men, using them as range-finders to assure him of the correctness of his own aim. It is for this reason mainly that it gives me pleasure to meet with you this morning, that I may be obliged to view matters from the standpoint of the opening years of the twentieth century, and through the eyes of the young people who are preparing to engage in the activities of life at a period when the greatness of opportunity will be matched by the difficulty of the problems requiring solution.

I think that perhaps on the whole, I may possibly congratulate you on being born at the time you were, of the stock from which you came, and on the place where you were first discovered. Whether I am justified in this or not I will never know; for that depends on what you are doing here in getting a good hold on yourselves physically, intellectually and morally, and also on what you do in maintaining that grip after you leave here. If you put yourself on the back because of your wisdom in selecting your parents, including your grandparents and ancestors for several generations back, I fear for your future. Really, when
you come to think about it, you had nothing to do with that; and you will risk failure if you take to yourself credit for being born of good New England stock, or of Dutch, or even of Scotch or Scotch-Irish. They were really good people and did their work well, without your help, and you are entitled to no credit. They had also their weaknesses and you inherit them, some of them at any rate. With two parents, four grandparents, eight great grandparents, to say nothing of more remote ancestry, you are likely to be pretty well stocked with weaknesses. If you are taking to yourself any credit for being born in New York State, I stand in fear for you. Really, you had nothing to do with that. This is your good fortune, but not your merit.

Your problem in life is to improve the environment in which you are placed by choosing the best associates and advisors, and with their help and the help you get in the home, in the church and especially in this university, to suppress as far as in you lies, the bad streaks, the weak points which you inherit from your parents, your grandparents and your great grandparents. On your success in doing this will depend the success of your life work, whether in twenty years after graduation you land in Congress (you might land in better places), or at the head of some great organization, or on some farm with a lovely wife and a half a dozen (more or less) fine children, or in the governor’s chair, or in the president’s, or in the penitentiary (where college graduates are quite common in recent years) or as a tramp, in whose ranks university graduates are not by any means uncommon; or whether, after finding yourself too weak to face the difficulties, you are moved out of the great stream into an eddy, to float aimlessly around and finally become moss covered, and rot like a fat weed on Lethe’s wharf.

In short, it will be a fearful mistake to assume that an additional sheepskin, even with a “cum laude,” or “cum summa laude” will insure your success in this twentieth century. You have this great advantage in entering upon your life work in the twentieth century; that if by making the best of your heredity and environment you become really big, your power will be vastly multiplied by the machinery of organization, just as the power of the farmer and the mechanic has been multiplied for the past half century. For this is a century of big things—big trusts, big banks, big railroads, big newspapers, big universities, a vast and complicated net work of organization; and the man who is big enough to go to the head and hold his position has a power for good, and also alas, for evil, hitherto unparalleled in the history of the human race.

The only limit to the size of the organization is the capacity of men to conduct it. These vast organizations present problems new in the history of our race; and sailing, as we are, over an uncharted sea, they will require for their solution a breadth of vision, a degree of wisdom, and particularly a love for humankind, greater than has ever been demanded in the days of our forefathers, or in any previous period in the history of the race.

As university men, fortunate in birth, environment, and in opportunity, you owe your race a service that no other class is so well qualified to give; that is, if you are genuine and sincere in search for truth, instead of merely a good time at your father’s expense.

Now you must not assume that the hitherto unknown opportunities you have for acquiring knowledge will make you use them more wisely than greater men than yourselves who have appeared in the ages of the past. This university gives you simply the opportunity for acquiring knowledge; any amount of it, on any subject and to any extent; but it does not give you wisdom, which is knowledge plus the wit to use it.

The recent ages have given us no greater man than Abraham, the ranchman, who believed that through him all the nations of the entire world should be blessed; than Moses, who combined in himself the physician, the
statesman, the warrior, and the sage; than David, who has voiced the joys and sorrows, the hopes and the sufferings of humanity, as no man ever has before or since. Passing by these great names of Holy Writ, the world has never produced a second Socrates, nor has the widest reach of human speculation passed beyond Plato and Aristotle, whose thoughts we are still thinking today. Victorian age never produced a Shakespeare or a Milton or even a John Bunyan. If men were really evolved from the monkey, the period of evolution must have been suspended many thousands of years ago.

The advantage we have in the twentieth century is not greater gifts of genius, but multiplied power with social evolution from the more simple to the more complex; hence greater leverage from a wider reach of the powers we may acquire from heredity, environment and opportunity. You will make a great mistake if you imagine that by pure intellect, by pure eloquence, by great ability as a writer, or an organizer or an executive, you can do anything that is really worth while. You may acquire fortune, fame, the power of adjustment over the lives and fortunes of men; but as soon as your grave is nicely rounded, and you have furnished a text for the penny-a-liner in the newspaper, before there is time to rear over you a monument of marble, the world will forget you; or if it remembers you, it will be only to throw stones and fling curses at your monument, if you have been its oppressor.

I regard it as a great mistake for any man to be educated intellectually beyond his moral capacity. Look back over the past twenty years of modern achievement in which the way of money getting, Pelion has been piled upon Ossa; and see who of the dead who were regarded mighty in their lifetime are remembered by a grateful people. Every passing year verifies that saying of wise old Solomon, “The memory of the wicked shall rot,” while passing decades and semi-centennials enforce the truth of that saying of that same acute observer: “The righteous shall be in everlasting remembrance.” If you will study the history of the last twenty, fifty, one hundred, five hundred, one thousand, two thousand, five thousand, years, you will find that the world cherishes the memory only of those men who have been altruists, who, whether in literature, science, business or the church, have aimed to do good to their fellowmen.

Really big men are now realizing that abiding success can be secured only by methods and practices that will help the common man. Hence, if you leave this University without a moral education at least equal to the intellectual, you will run counter to enlightened public opinion; and whatever immediate success you may have in praying upon your fellowmen, you will not be regarded even by your friends or your own children as a fine human being worthy of imitation; and the world may conclude in the next fifty years that it does not want any more of your kind. The world suffers more from men of great ability, highly educated but destitute of moral character, than it does from all the hordes we are yearly taking in from southern Europe.

I spoke at the outset of the blessing that comes to older men by keeping in touch with the young, and especially with young men and women who have not lost the ideals and aspirations of adolescence. Pardon me if I speak of the benefits that may come to young men and women by keeping in touch with older people who through all the conflicts and vicissitudes of life have kept sweet, whom age has not imbibed nor disappointment soured, who have perhaps been growing in influence and power with advancing years.

You will find them everywhere—on the farm, in the shop, in the great marts of business, in the pulpit, in the chairs of the university. Learn the secret of their lives and follow their example, which you can do only by
catching their spirit. You will find that they have all along kept in touch and in sympathy with the common people, with the toilers in humble places, whether they themselves so toiled or not. They have stood for human rights and toiled for human betterment. Hence those with wider opportunities have become tribunes of the people, eyes to him that cannot see, ears to him that cannot hear, voicing unspoken thoughts of the masses, who feel what they cannot put into words; while those in humbler places have had their no less real influence, but in a more narrow sphere, of whom the world knows not except through the lives they inspired.

Let me close with a diction: After you have been away from these classic shades for twenty-five years, after you have had your share of the ups and downs of life, after you have found yourselves, you may be disposed to analyze the education you have received here. You may ask yourselves: How much of my education came from the class room studies? How much from literary societies and contests? How much from the athletic field? How much from daily association with my fellow students? How much from my contact with my teachers quite apart from their teaching?

You will find that while you have received help from all your teachers, a very large part—and I think the larger part—has come from a very few men who, in a way you did not understand at the time, touched your life in a most vital way, fired your ambition, imbued you with their spirit; and whose personality has remained with you for a quarter of a century, and will remain with you till you die. You will speak of them to your children, and forever bless the day when the influence of a really big man came into your life.

CONFERENCES HELD IN FARMERS’ WEEK
By O. M. Smith, ’13

COUNTRY CHURCH CONFERENCE
The Third Annual New York State Country Church Conference was held on Tuesday, February 20. The discussions centered about the general theme: “Present-day factors in successful country church work.” President Stewart of Auburn Theological Seminary very ably presided over the sessions. The following program was carried out: The Country Church, a statement of conditions, Prof. F. A. Starratt, Hamilton; What service shall the country church render? Rev. S. E. Persons, Cazenovia; Modern methods in country church work, Rev. M. B. McNutt, Plainfield, Ill.; The farmer’s task, President K. L. Butterfield, Amherst, Mass.; Factors that determine the efficiency of the country church, Dean G. W. Fiske, Oberlin, Ohio; A constructive program for the country church, Rev. C. O. Bemies, McClellandtown, Pa.; The country-life movement, Director L. H. Bailey; What shall the church contribute to the country-life movement? President K. L. Butterfield; The Men and Religion Forward Movement, in relation to country life, Henry Wallace, editor of Wallace’s Farmer, Des Moines, Iowa.

The addresses, which were uniformly clear and full of suggestions based on experience, were heard by audiences aggregating 1200 persons for the day. The discussions based on the various topics were full of interest and purpose. All through the conference the note of larger community service was sounded. The conference was in every way a distinct advance over those of previous years. Approximately one hundred ministers, largely from rural districts, were present, aside from a considerable number of theological students and lay delegates from churches. Several states were represented in the audience.
The annual meeting of the students' association was called to order at 10 a.m., Wednesday, Feb. 21, 1912, by Pres. L. C. Corbett. “Uncle Henry” Wallace addressed the members of the association taking as his subject, “The Young Man of the Twentieth Century.” At 11 a.m., Dean Bailey spoke on “The College Man and the State.” Hon. James W. Robertson closed the program with a strong speech on “Conservation of Life in Rural Communities.” A report of the Long Island branch of the Students' Association was given by R. H. Dayton. H. H. Harriman gave a similar report of the Chautauqua branch. Mr. Webster's resolutions in relation to the promotion of Agricultural education were adopted.

The recommendation of the faculty of the Agricultural college, that degree be changed from B. S. in Agr., to B. S., was approved.

Samuel Fraser moved that the Association select and submit to the Governor for his consideration, a list of men whom the members of this Association regard as desirable persons to be appointed as State trustees of Cornell University and request that if possible, he make his selection from this list. This motion was carried and a committee of twenty-five was charged with selecting these names.

The committee of twenty-five was organized with M. C. Burrill, chairman, and M. F. Webster of Ithaca, secretary. The members of the committee conferred with Dean Bailey and recommended that a permanent extension man be appointed to cooperate with former students in solving their personal or local problems.

Officers elected for the ensuing year were: President, M. C. Burrill; first vice-president, F. E. Rogers; second vice-president, R. H. Dayton; third vice-president, H. H. Harriman; fourth vice-president, A. H. White; secretary, A. R. Mann; member of Executive Committee, S. Fraser.

The annual meeting of the Experimenters' League was held on Thursday afternoon of Farmers' Week, February 22d. President T. E. Martin of Syracuse presided. A number of interesting papers upon different experiments conducted by members, were read and discussed. Although the meeting was not largely attended, yet it was the unanimous voice of the members present to continue the work of the League and to endeavor to arouse more interest in its future work. It is planned to have experiments taken up in every county of the state and a careful report of each one made at the next annual meeting.

These experiments cover some of the most important of the newer problems that are just now pressing themselves on the farmers, and it is the aim of the league to help each man to work out his own problems.

The officers for the ensuing year are: President, T. E. Martin, Syracuse; secretary and treasurer, R. H. Wheeler, Ithaca.

Persons desiring to take up experiments should correspond with the secretary at once.

* * *

Homemakers' Conference

The Fourth Annual Meeting of the Homemakers' Conference was held in connection with Farmers' Week at the New York State College of Agriculture with an attendance of from four to five hundred women throughout the week.

There were demonstrations and exhibitions of work and household equipment upon the fourth floor of the College in the Department of Home Economics. A full line of household electrical appliances including an electric fireless cooker attracted much attention. Of more interest to the farm community were appliances to be run by gasoline or water power. There were fireless cookers, vacuum cleaners and similar equipment suggestive of the simplification of work in the home.

Books, bulletins and pamphlets on simplified and more scientific house,
keeping were on exhibition throughout the week. The Winter Course students who were completing their three months course of study had on exhibition invalid trays. A first and second prize were offered for the invalid trays and were won, the first by Miss Louise B. Crawford, the second by Miss Louise Ward. Mrs. Olive Brown Sarre, Napanoch, N. Y., who several years ago attended a winter course in poultry, offered a prize to the winter course student who should present the best week's menus. The cost and nutritive value were taken into consideration. The prize was taken by Mrs. Delia L. Reyna, Ithaca, N. Y. It was a handcraft silver medal bearing the inscription of the College of Agriculture and the year on one side, and on the other, the Japanese emblem of Mr. Sarre's mountain home at Napanoch.Honorable mention was made of the menu prepared by Miss Maria Espinola.

A new feature on the program this year was a conference of instructors who are interested in preparing their students for work in rural progress. There were representatives from Pratt Institute, Teachers College, Simmons College, Albany Normal School, New York State Department of Education and several of the public high schools. Discussions upon methods of work, preparation, etc., were engaged in by instructors and farm women.

Another interesting feature of the conference was the meetings of the representatives of the Cornell Study Clubs. There are forty clubs in the state conducting meetings upon domestic science programs within the Home Economics Extension work.

* * *

DAIRY STUDENTS' ASSOCIATION

The annual meeting of the Cornell Dairy Students' Association was held during Farmers' Week, February 20, 1912. An interesting program was presented. The subjects discussed were, "The Production of Clean Milk," "The Manufacture of Butter," and "The Relation of the Dairy Students' Association to the Dairy Interests of the State." At this meeting the regular business meeting was held which included the election of the following officers for the coming year: President, W. L. Markham, Falconer, N. Y.; vice-president, J. H. Kelly, Lysander, N. Y.; secretary, Frederick Ballantyne, Auburn, N. Y.; assistant secretary, R. C. Clark, Norwood, N. Y., College secretary, H. E. Ross, Ithaca, N. Y.; treasurer, R. T. Quick, Lake Placid Club, N. Y.

The association also passed resolutions favoring a dairy products judging contest to be held annually in connection with the State Fair.

The Cornell Dairy Students' Association is an association of men who have taken the winter dairy course at the College of Agriculture. There are between 2200 and 2300 dairy plants in New York State, and many of the operators of these various plants are men who have taken the winter course in dairying. It is the object of the association to keep these men in touch with one another and with the College of Agriculture. By so doing both the College and the men will receive a great deal of benefit.

* * *

NEW YORK PLANT BREEDERS' ASSOCIATION

The fourth annual meeting of the New York Plant Breeders' Association was held during Farmers' Week.

An important affiliation has been affected with the American Breeders' Association whereby members of the latter Association residing in New York State may also become members of the State Association. The regular fee of the National Association ($2.00) covers the cost of membership in both Associations.

The Association was reorganized this year and a new constitution adopted. The membership consists of two sorts, active and associate. The former are persons who are actively engaged in the improvement of crops by breeding, the latter comprises persons who are interested in the objects of the Association.
The program, consisting mostly of talks by the Plant-Breeding Staff, was as follows:

**Wednesday, February 21st.**

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<tr>
<th>Time</th>
<th>Speaker/Talk</th>
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<tr>
<td>9-10</td>
<td>Mr. C. H. Myers, Principles of Plant Improvement as applied to New York State Crops.</td>
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<tr>
<td>10-11</td>
<td>Professor U. P. Hedrick, New York Agricultural Experiment Station, Geneva, Pedigreed Fruit Trees.</td>
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11-12 Dr. H. H. Love, Breeding of Corn.

12-1 Annual business meeting of New York Plant Breeders' Association.

**Thursday, February 22d**

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<th>Time</th>
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<tr>
<td>9-10</td>
<td>Mr. C. E. Leighty, Breeding Plants for Resistance to Disease.</td>
</tr>
<tr>
<td>10-11</td>
<td>Dr. A. W. Gilbert, Breeding of Potatoes.</td>
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<tr>
<td>11-12</td>
<td>Dr. H. H. Love, Breeding of Wheat and Oats.</td>
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12-1 Dr. H. J. Webber, Breeding of Timothy.

Other members of the Association residing outside of Ithaca haven't their experiments sufficiently under way to be able to report upon them as yet.

Officers were elected for the ensuing year as follows: President, Samuel Fraser, Geneseo; vice-president, Herbert P. King, Trumansburg; secretary, Arthur W. Gilbert, Ithaca; treasurer, Arlington Mapes, Stanley. Members of the Executive Committee: Professor U. P. Hedrick, Geneva; Professor H. J. Webber, Ithaca; E. W. Mosher, Aurora.

* * *

**NEW YORK STATE VEGETABLE GROWERS' ASSOCIATION**

For many years the fruit interests of the state have enjoyed the advantages of societies of large membership and wide influence. The vegetable growers, probably because of their segrega-
tion in comparatively small areas, have not come together in organizations similar to our great horticultural societies. A year and a half ago, the need of a state association of vegetable producers was expressed by several men from different parts of the state. After further inquiry as to the feeling of the leading producers had been made, a call was circulated for a meeting to consider the advisability of forming such a body. A meeting was held at Cornell during Farmers' Week of 1911, and the New York State Vegetable Growers' Association was organized with a membership which, though small, represented widely different sections and interests of the state.

After a year of successful activity in the establishment of the new organization, the second annual meeting was held during Farmers' Week. The program covered three days, and included addresses by Prof. R. L. Watts, head of the Department of Horticulture of the Pennsylvania State College, Professors Webber and Fippin of our own College of Agriculture, and Messrs. C. H. Aldrich of Mattituck, Long Island, R. H. Garrahan of Wilkesbarre, Pennsylvania, M. H. Holmwood of Orchard Park, New York, C. W. Waid of New Carlisle, Ohio, W. L. Bonney of Batavia, New York, and Chauncey West of Irondequoit, New York.

Among the subjects discussed were the culture of asparagus, cauliflower, celery, early cabbage, and onions, the reclamation of mucklands, the good seed problem, plant breeding, greenhouse crops, and greenhouse construction.

One of the most notable features of the meeting was the work of the standing committees. Each chairman had prepared his report only after careful investigation and study. The perfunctory discussions that are so common were notable by their absence, and every committee presented definite information and suggestions along lines of the greatest interest to vegetable producers. Two of the committees had made use of widely circulated special letters to secure the data required. The subjects taken up were as follows: Cooperation, M. H. Holmwood; Investigation, T. Greiner of La Salle; Legislation, E. A. Tuttle of Eastport; Marketing, H. W. Baxter of Rochester; Transportation, W. F. Hallauer of Irondequoit, and R. H. Dayton of Northport.

The Association took action providing for representation at a conference on cooperation which is shortly to be held in New York City under the auspices of the State Agricultural Society, recommending the establishment of demonstration farms and secondary schools of agriculture, requesting the United States Department of Agriculture to include celery, onions, and cabbage in its system of crop reporting, urging the passage of an adequate parcels post law, and favoring the passage of legislation providing for the regulation of commission sales and accounts. The Legislature was also asked to favor the appropriation of $50,000 for special greenhouses for vegetable and horticultural investigations at Cornell.

The officers of the Association were re-elected as follows: President, C. R. White, Ionia; vice-president, M. H. Holmwood, Orchard Park; secretary, Paul Work, Ithaca; treasurer, C. H. Aldrich, Mattituck.

The growth of the Association has been gratifying to its members. It is not yet very large, but its members are widely distributed over the state, and are keenly interested in its activities. The work of the Association is and probably will continue to be primarily educational. It plans to hold an annual meeting in which the producer can come in contact with the best speakers and the best informed men in the country, to encourage the organization of local associations, both educational and cooperative, to exercise a helpful influence over legislation, and to secure the investigation of vegetable problems. A line of work that promises to be of more tangible dollars-and-cents value has been undertaken. This has to do with the problem of good seed. The officers are
confident that the Association can make itself quite useful in bringing its members into touch with sources of seed that are good and that can be depended upon.

* * *

NEW YORK STATE DRAINAGE ASSOCIATION

The New York State Drainage Association held its third Annual Convention on the first and second days of the Farmers’ Week period. Four sessions were devoted to the discussions of drainage matters in its many phases, as applied to New York State conditions. There were a larger number of papers than at any previous Convention, and the attendance also was markedly larger. Many points of special interest were brought out during the discussion. For example, Mr. David M. Dunning, President of the Auburn Savings Bank, a practical farmer, and winner of the 1911 Cup for the best report on drainage, stated that his bank had never been obliged to take on mortgage any farms except those which were wet or poorly drained; and that he would never refuse a loan for drainage purposes if he were assured that it would be intelligently applied. He reported a yield of 64 bushels of wheat on a piece of heavy clay land on his own farm, which is thoroughly tile drained. Mr. Mellen, the present owner of the Johnston farm near Geneva, which has been underdrained for a period of more than a half century, reported a recent yield of 52 bushels of wheat; and Mr. Rogers, of Rochester, reported a yield of 48 bushels of wheat on tile drained land. Mr. Mellen exhibited the beautiful silver pitcher and goblets which were presented to Mr. Johnston, in 1859, by a group of leading agriculturists in the state in recognition of his leadership in drainage matters.

At the session on Monday evening,

(Continued on page 240)
THE ELEMENTS OF CLEAN MILK PRODUCTION

By Dr. C. E. North
Secretary of National Commission on Milk Standards

So much has been said and written about dairy sanitation that the sanitary measures required for clean milk production are becoming well known even to the general public. Nothing has occurred in the dairy industry of such powerful influence as the certified milk movement in emphasizing the importance of sanitary measures in milk production. The influence of certified milk is seen and felt in all of the rules and regulations of departments of health and in the sanitary precautions observed in first-class modern dairies which are not included in the certified system.

There is of course no monopoly of cleanliness. In a general way the necessity for sanitary measures in the dairy industry has been understood for centuries. Even Shakespeare, who seemed to be an expert in every line, states as a most commendable characteristic of one of his heroines, "She could milk, look you—a sweet virtue in a maid with clean hands."

The general subject of clean milk production can be divided into three parts: (1) the sanitary measures themselves; (2) the means for their adoption; and (3) the quality and cost of the product. It is obvious that in the long list of sanitary measures which are advocated there are some mental things and those things of primary importance which will give the greatest improvement with the least change and the least expenditure of effort.

The list of requirements of one medical milk commission contains over seventy items, and another more than sixty items. The several score cards also contain a large number of items. On the score card an attempt is made to place a value on each item which indicates its relative importance. Sixty per cent for methods and forty percent for equipment indicates that what is done by the dairy farmer is considered to be more important than what he has in equipment. Without attempting to draw up a lengthy list or to discuss the relative merits of the numerous sanitary measures, I will...
point out that among them all there are three which are so efficient and of such fundamental importance to success in clean milk production that all other measures are of comparative insignificance. These three are the following: (1) The sterilizing of milk utensils by means of boiling water or steam; (2) The use of small mouthed covered milking pails; (3) The use of ice water or ice for cooling milk. I can hear the question raised at once regarding a clean barn and a clean cow, washing the udder and the hands, white overalls and the removal of manure, and all the other things usually recommended; but it is never-

It is one thing to specify sanitary measures and quite another to bring about their adoption. This distinction has not been made sufficiently clear and for this reason emphasis has often been laid in the wrong place. In any community where milk improvement is to be brought about, the steps taken to bring about the adoption of sanitary dairy practice are fully as important as is the practice itself. In general, it has been thought that laws and ordinances and rules and regulations are of the most influence. These have been given a long and a fair trial, but the results do not indicate that they are efficient or ever will be. The voluntary endorsement furnished by medical milk commissions represents another kind of attempt and to a very limited extent has been effective. Private auspices offering commercial advantages mark a step in the right direction. The contracts of some of the large milk companies where slightly higher prices keep pace with slightly better conditions is another step in the right direction. It has been easy to forget that milk itself is a great commodity. Like other articles of commerce it is subject to the laws of supply and demand. These laws it cannot escape. Any improvement in quality must necessarily be accompanied by an advance in price. Law can never bring about an improvement in quality without such advance in price, since this would result in driving men out of

theless true that with sterile utensils, covered milking pails and ice, an attack can be made on the dirtiest of dairy barns, cows and milkmen, and the experimenter can emerge from the contest with milk which is astonishingly close to the certified article so far as bacteria and dirt are concerned, even though no other precautions whatever are practiced.

That these three sanitary measures are capable of regularly giving such results is exemplified in the work of the New York Dairy Demonstration Company at its plant at Homer, New York, where there are now seventy dairy farmers producing over ten thousand quarts of milk daily, the larger part of which contains less than ten thousand bacteria per cubic centimeter, day after day, and month after month.
the business. Dairy inspection repre-
sents the long arm of the law, wielded
over the head of the milk producer. It
can have only a temporary effect unless
there is an equivalent response on the
part of the milk consumer so that a
proper price is paid for further im-
provement in quality.

There is no law or system of inspec-
tion sufficiently comprehensive to pre-
vent frequent contaminations and in-
juries to milk from occurring on the
farm of the milk producer, if the pro-
ducer himself is not thoroughly satis-
fied that it is to his own business
interest to practice sanitary methods.

The elements which are of the
greatest influence in bringing about the
adoption of sanitary milking are in my
opinion as follows: (1) The payment
of premiums to the milk producer
which cover the cost of cleanliness and
the cost of tuberculin testing, etc. (2)
Regular and frequent laboratory ex-
aminations of milk to determine its
sanitary quality. The payment of
premiums for sanitation must be based
on the laboratory examination since
the laboratory can exercise a degree of
watchfulness which can never be
approached by the dairy inspector.
The payment of premiums for tuber-
culin testing and the health of dairy
cows must be based on regular veteri-
nary service. (3) Dairy inspection. In
the majority of cases, however, dairy
inspection does not contribute any-
thing of importance to the production
of sanitary milk, providing the two
first mentioned steps have been taken.

Assuming, then, that milk producers
have been induced to practice the
elements of clean milk production, the
question arises as to the character and
cost of the final product. The several
preliminary experiments which have
been made are confirmed by the exten-
sive experimental work which has been
conducted for more than a year at
Homer, New York, in that it has been
demonstrated that clean milk from
tuberculin tested cows can be produced
by dairy farmers at a comparatively
small advance in price. In this work
on any dairy farm, by the rank and file
the premium necessary to satisfy the
dairy farmer for the tuberculin testing
of his herd has been one-half cent per
quart. The premium necessary to
induce him to practice the elements in
sanitation has varied from a minimum
of one-fourth cent per quart to a maxi-
num of one-half cent per quart. Thus
to the producer alone experience has
shown that an advance in price of
from three-quarters to one cent will
secure milk which is clean and which
comes from healthy tuberculin tested
cows. The bacteriological examina-
tions of this milk have averaged under
ten thousand bacteria per cubic cen-
timeter for many months.

Perhaps the greatest element in
reducing the cost has been the estab-
lishment of a central station where all
washing and sterilizing of utensils is
done, including milking pails and milk
cans, and where all bottling and cooling
of milk is performed. Here also has
been the bacteriological laboratory
where the milk of each producer has
been tested daily. The cost of operat-
ing the central station has varied
between one-fourth cent and one-
half cent per quart in excess of the
cost of operating a shipping sta-
tion which does not possess such
features. This, therefore, means that
the final cost of the product in
quart bottles has varied from a
minimum of one cent per quart to a
maximum of one and one-half cents
per quart above the cost of ordinary
milk. The entire cost of cleanliness
alone without the tuberculin testing
of cattle has varied from a mini-
um of one-half cent per quart to a
maximum of one cent per quart.

It seems clear that if the milk con-
sumer can be educated to pay one cent
more per quart for milk the bulk of the
milk supplied can be transformed into
clean milk and the milk problem can
be settled on a purely economic basis.
THE FARMER'S TASK

Abstract of address delivered during Farmers' Week by L. K. Butterfield, President of Massachusetts Agricultural College

If we should ask those who have thought about the question, what is the task of the working farmer, there would be many different answers. One class of thinkers belongs to the school of profits. This school teaches that the aim and end of agriculture is profits. Then there is the school of romance which looks at the spiritual side. But the middle ground is the best; we need poetry as well as profits.

There are five phases of the farmer's task. In the first place, it is the farmer's task to make a living. This duty he owes to his family and to society. A man must, pull his own weight. Every part of progress must be based on the farmer's economic prosperity. The practical man's point of view is all right to start with. It is worth all the federal and state expenditures which have been made to help the farmer make a good living. But some people think that if they enable a farmer to make a living their duty is done. This idea is false for in the second place, the farmer must also live his life. What good is he if he provides for his family and does nothing more? If the schools and churches are not as good as the agriculture or as good as they were twenty-five years before, his task is not done.

He must grow and develop and his children must have the same chance. Too many farmers do not contribute an iota to the development of the children. They must take interest in the life of the boy and girl. This is also true of the woman, the home maker. What does home mean to the home maker, drudgery or a chance to develop? The drift to the city is mainly due to the drudgery of the farm.

Then, too, there is a third consideration, the farmer must fulfill a trust. He thinks of himself as the owner of a parcel of ground. He has assumed that it is wholly his. But if the railroads have a trusteeship, are subject to government regulation, and ought to serve society, it follows that the farmer has a trusteeship. He did not create, nor can he take with him, that land which must be tilled after he has gone.

The fundamental service of the farmer is to provide food for those who cannot get it except by buying it with their labor. This duty involves the obligation that he must pass it on unimpaired. The greatest problem of conservation is the conservation of the soil, providing for the continued fertility of the world's greatest agricultural area.

In the fourth place, the farmer must build strong communities. The present period is one in which man can do little as an individual. We must place more emphasis on communities. In this connection, a plea should be made for more beauty in country life. There are many farmers who think that this idea is a fad and a frill, but the time is coming when beauty and convenience will be big assets.

The maintenance of churches, schools, and farmers' organizations we are bound to meet before we get very far in rural progress. There can be no hope unless the country schools are equal to those of the city. The things that the church stands for must be dominant in country life. Some farmers' organization is necessary and it cannot live unto itself alone. The farmer must give service and money to them. A community without them must soon break down. But in cooperating we must not get the idea that the farmers as a class are antagonistic to other classes.

The fifth and last phase is helping to solve problems of the wider community. The farming vote has always been decisive in politics. At the time of the Civil War the farmers were not unmindful of their duty. And today we cannot leave our problems to the city. The farmer may feel outside these problems, but he is not; he must make himself felt in the councils of the nation.
THE THIRD ANNUAL EASTMAN STAGE

The Eastman Stage was held in Sibley dome on Friday evening, February 23. As usual, the stage proved to be one of the most interesting features of Farmers' Week. After opening with a few musical selections from the Glee and Mandolin clubs, Ex-president Andrew D. White, the presiding officer called upon Dean Bailey who read a letter from Mr. A. R. Eastman, the founder of the stage.

The first speaker on the program, C. W. Whitney, '13, gave his answer to the question, "Why be a Farmer?" He was followed by M. C. Kilpatrick, Sp., who discussed, "The Rural Church," touching upon its relation to rural society. The third speaker, W. H. Hook, '12, discussed the importance of, "Special Attention to the Farmer of To-morrow." "The Farmer as a Business Man" was the subject of the fourth speech by F. E. Rogers, Sp., in which was outlined a practical and simple method of keeping track of the farm business. M. B. Goff, '13, next discussed, "Present Day Pioneers." He compared the men who are evolving new agricultural practices to the men who in former years went into new lands in the vanguard of the march of civilization. The last speaker, W. H. Bronson, '13, spoke regarding, "Secondary Agricultural Education." He showed the importance of agricultural education in our secondary schools and maintained that courses should be established in rural high schools.

To Prof. E. L. Nichols, of the Physics Department of Cornell University, Mr. F. W. Howe, of the Department of Education, Albany, N. Y., and Mr. I. C. H. Cook, of South Byron, N. Y., as judges, fell the difficult task of deciding upon the winner of the $75 first prize and of the $25 second prize. While the judges were pondering, the audience was favored with several selections by the University Quartette and by the Ag. Mandolin Club. Dean Bailey was called upon and spoke of the excellence of the stage. The subjects treated he said, were so comprehensive as to embrace the main phases of country life work, practical, intellectual and spiritual.

After some time the judges returned and Prof. Nichols, announced the decision. The first prize was awarded to M. C. Kilpatrick of Valencia, Pa. and the second prize to F. E. Rogers of Canandaigua, N. Y.

Dr. White congratulated the speakers on the excellence of their work and assured every speaker, whether a prize-winner or not that he had benefitted by participating in the stage. After Dr. White's remarks the program was ended by all joining in the Evening Song.
THE RURAL CHURCH
By M. C. Kilpatrick, Sp.

Editor's Note:—This speech won first prize in the Third Annual Eastman Stage, held in Sibley Dome, during Farmers' Week, February 23, 1912.

There is nothing produced upon the American farm comparable in real worth to American manhood and American womanhood. The real strength of a nation lies not in the wealth and power of its great industries; not in its intellectual attainments; not in the development of its natural resources; it lies in the character of its citizenship. That nation which has the strongest and most capable citizenship will be the strongest and most prosperous nation. If the industrial, intellectual, or agricultural development of a nation is to be of permanent value, it must be accompanied by a corresponding development of national character.

National character is largely dependent upon the character of the country population, for the rural districts are the seed bed from which even the cities are stocked with people. Because of the great and constant stream of rural migration, the agricultural community greatly influences the character of the whole country. Blood infused from the country districts is the life blood of our professions. Since national character is so dependent upon the rural districts, it is imperative that high ideals and strong characters predominate there.

In the development of our agricultural communities all rural social agencies have a part. The development of the whole community is in direct proportion to the development of its social institutions and the proper performance of their various functions. The most efficient of these institutions are the home, the school and the church. The greatest of these is the church for in all ages and in all lands it has vitally influenced the moral tone of both the home and the school. The home and the school have always been the strongest in the development of character when in the closest social touch with the church.

Economists, in discussing present day conditions in the rural church, tell us that it is lost, that it is struggling for its very existence, that it has failed in the proper performance of its social mission. It has suffered great loss by reason of rural migration. In many instances a little group of weather-beaten stones, rearing their solemn heads through a tangled mass of vines and briars, is the only remnant of a once powerful church. Existing churches are usually weak in numbers. They do not always accomplish what we expect of them. It is easy to find fault with the rural church but with all its faults, there are virtues, too.

Today, realizing its economic weakness and its social short-comings, the rural church is making an honest effort to know what it must do in order to be made efficient in the performance of its duties. It is not dead. It is not even as much asleep as some would have us believe. We can still sing with the poet:

"We thank Thee that Thy church unfailing,
While earth rolls onward into light,
Through all the world Thy watch is keeping
And rests not now by day or night.
The voice of prayer is never silent
Nor dies the strain of praise away."

The rural church, in its attempts to strengthen itself, is offered many remedies; some good, others not in any way adapted to its needs. In order that any real progress be made it is essential that the church realize that its mission is two-fold—the regeneration of the individual and the reformation and development of rural society. The gospel of Christ which the church is to preach is social as well as individual. It proclaims individual and social regeneration, individual and social salvation. The church must have a high appreciation of its real worth to the community and a deep consciousness of its great responsibility. It must regard the rural migration which
is largely responsible for its economic weakness, not as a calamity, but as a wonderful opportunity to influence the moral tone of the whole nation. The rural church which properly understands its mission and is faithful and efficient in the performance of its duties is a wonderful power for human welfare.

Present day discussions of the rural church all center around its mission of social service. In its efficiency here, it is found wanting. If the rural church expects to be a strong, sturdy organization, it must be more efficient as an agent of social service. Church leaders fail very often in their understanding of social service and have vague ideas as to its accomplishment. Prof. Carver of Harvard has given us this splendid definition. "Social service is anything which builds up a community and makes it strong, powerful, progressive and prosperous."

The rural church, if it is to take its proper place as a factor in the progress and prosperity of the community, must stand upon this broad platform. It must teach and preach social service in this broad constructive sense. This does not mean that it be made a social club. It is not the business of the church to provide amusement for the community. The installation of a bowling alley or a pool table will not make the church an efficient social service agency. It is not often necessary that the church concern itself directly with providing means of aesthetic enjoyment for its people. It should not attempt directly to be a training school in agriculture. In the performance of its social duties it is neither necessary nor desirable that the church attempt to organize the various machinery of rural society. It is not the province of the church to construct social machinery nor is it often adapted to be an effective executive of social movements. Its mission is higher. It is the dynamic of society for which the church is responsible but the dynamic which it furnishes must be a dynamic which will create, which will control social machinery independent of the organization of the church.

All social movements resolve themselves finally into the personal element and what the church does in the way of social reformation must be accomplished through the power of personality. The proper development and control of this personality depends upon the function of the church as a place of worship. Worship is the primal activity of the church. Take worship out of the church and you leave no real reason for its existence. The church has a work which is distinctively its own, and the proper performance of this work depends upon its being a place of worship. Through all the centuries of its existence, the Christian church has lived and developed because it has been a centre of worship, for there is nothing so effective in attracting and holding men as this. It is the greatest unifying agency in the social world. It is inherent in the human heart to worship. Whether it be a god of wood or stone, the Unknown God or the Great Jehovah, no people have yet been discovered who did not worship something. There is a vast sense of incompleteness in the man who does not know its true meaning. He is like fruit that has ripened in the dark and not in the sunlight, inferior both in appearance and in quality. Man is not normal until he worships, and no community can be developed without normal men. In any attempt to reconstruct the dignity of a community or to develop its latent powers, the religious nature must be reckoned with. No form of amusement, no aesthetic enjoyment, not even intellectual development can be allowed to take the place of worship in the rural church without seriously impairing its efficiency as an agency of true social service.

When the church properly fulfills its function as a centre of worship, it becomes immediately a great inspirational centre. True worship is the channel of power, the true foundation of character. Man looks upon his natural features in the glass but gazing all day long will not change one iota of his appearance. He turns away
forgetting even what manner of man he is. Not so with the true worshipper. Brought into contemplation of, and communion with, God in the solemn atmosphere of the Holy place, gazing upon Him with eyes of faith and holy fear, he sees himself in all his littleness, yet, through the influence of prayer and of praise in the worshipping assembly, he is filled with high ideals, with noble aspirations, and from the very fullness of his emotion cries out— "What good thing must I do?"

But you say that the development of high ideals and noble aspirations means merely building castles in the air. Thoreau tells us, "If you have built castles in the air, your work need not be lost. That is where they ought to be. Now, put foundations under them." If the church leads to high ideals, it must aid in their realization. It must help put in the foundations. Upon it lies the burden of an educator. It must be a training school in social service. The church must teach men that there is nothing of itself common or unclean. A man's attitude towards his world has a great deal to do with his effectiveness and with his satisfaction in living. As a moral educator, the church must bring men into proper attitudes toward their environment. It must direct into proper channels the emotion kindled and fanned into flame by its worship. To make impressive its teaching of social service in the broad constructive sense, it must cooperate with every institution which in any way affects the development of the individual.

The rural church can only be developed to the limit of its efficiency through the normal, intelligent actions of those who constitute it. The members of the rural church themselves must make it the greatest socializing and spiritualizing agency in the community. To accomplish this, it must have leaders. From whence are to come those who are to lead the church along the higher way?

Long years ago, in the days when we are told God talked directly with men, the armies of Israel were on the eve of a great conflict. The King came to the Lord with this question—"Who shall order the battle?" who shall be set in the forefront to lead the charge—and the answer came from God himself—"The young men of the princes of the provinces." The solution of the problems of the rural church, yes, of the whole country life problem, rests with the young men, the princes of the provinces. It depends upon young men born in the rural districts, familiar with rural needs, with rural conditions, with rural customs—young men who are filled with a love for the open country—young men in particular who have had the advantages of an agricultural training. Young men, the most fertile field for social service is the rural church. If you would serve your community, your state, your nation, give some of your time, some of your energy to making it what it ought to be, faithful and efficient in the performance of its functions as a place of worship, a great inspirational centre, a training school in social service.

Listen to the most heartrending cry of the ages. "No man careth for my soul!" It is the cry of the marginal man, the man on the outskirts of society. Having established the church upon a strong, deep spiritual basis, make it cooperative with every institution, domestic, educational and social, in reaching the marginal man and in the development and control of the greatest power in the social universe, the power of personality.

Then will we hear with deeper meaning the grand prophecy of the beloved John—"And I heard a voice from heaven saying, 'Behold, the tabernacle of God is with men!'" Then will the rural church be in truth a social service church, then will it be efficient in answering the cry, the world-wide cry: "God give us men. A time like this demands Strong minds, great hearts, true faith and ready hands. Men whom the lust of office will not kill. Men whom the spoils of office cannot buy. Men who possess opinions and a will. Men who have honor. Men who will not lie. Men who can stand before a demagogue And damn his treacherous flatteries without winking. Tall men, sun-crowned, who live above the fog In public duty and in private thinking."
ABSTRACTS OF FARMERS’ WEEK ADDRESSES
By L. H. Bailey

THE SELF-HELP IDEA IN COUNTRY-LIFE WORK

A LL during the centuries the farmer has been a self-helper. He has been independent, has judged situations by his own experience, and to a large extent has drawn his own conclusions. The farmer is the owner and the manager of a business. He is not a cog in a wheel. He therefore needs a very broad experience, and also the habit of establishing his opinions and practices on the situation just as he sees it.

The attitude of the institutions has been that they are to help the farmer in all his problems even though the farmer may be unwilling to receive aid in particular cases. This attitude must, of course, continue for disadvantaged persons and disadvantaged regions; but the institutions are now called on to do so very much work that they must choose what they shall do, and they naturally will place their work where it will have the most effect. Localities that are not particularly crippled should bear a part of the responsibility and furnish a part of the money needed for welfare or extension work. It has long been a practice that local expenses of farmers’ institutes shall be borne by the locality. The agricultural work is placed in the public schools on the condition that the localities contribute their part. Such organizations as the Experimenter’s League, the cow-testing associations, extension schools, and the like, also operate on this principle. Industrial fellowships are now being established by Cornell University in connection with farmers’ organizations, these organizations advancing money to employ a fellow or expert, but the college to supervise the work and to be responsible for its scientific accuracy. The locality will get very much more out of an enterprise of this kind than when the institution bears the full responsibility and carries the entire expense.

Much is now being said about demonstration farms. So far as the College of Agriculture is concerned, it is glad to arrange demonstration or teaching plats on farms voluntarily with the farmer; but if permanent plats are desired, the people in the localities should have ownership in them, control them at least cooperatively and have responsibility in them. The question of county agricultural agents is now beginning to receive attention. The agents should be to the agricultural community what the teacher is to the educational affairs and the minister is to the religious affairs. It may never be possible to find one man who can give expert advice on all the phases of agriculture in his locality, but he can establish instruction, set things going, act as the reporter of agricultural problems, and guide the people to particular sources of information. There is a bill now before the legislature that would allow county boards of supervisors to use county money for the development of agricultural resources. These county local agencies should be established, whether representing counties or other groups, largely on the initiative of the localities themselves. Competent men will be found gradually as time goes on; and the communities should be allowed to have them. Of course, these local agents ought to have very close relations with all the agricultural institutions of the state, otherwise they cannot be the best guides. Naturally, some of these agents will attach themselves to one institution and some to another, but they nevertheless ought to represent the application of the best teaching in their localities wherever the suggestions originate.

There are several movements now on foot to give federal aid for agricultural and similar education in the states. There should be more money for such education. It is immaterial whether this money comes from the state treasury or whether the people’s money
is disbursed back to them by congress; but it is of the very greatest importance how the control of such education is to be exercised. We have developed educational policies on state lines. Every one of the states may be considered to be a great experiment station in educational, economic and social problems; and this is fundamentally the great merit of the American system of government. There is every probability that better results will be secured in the end by allowing such experiments to continue rather than to try to make any uniform or national system of education. The government should reimburse the states for a certain percentage of the money that the state expends in developing education along agricultural and domestic lines. Undoubtedly it is possible to work out a plan of national cooperation that will produce good results, but we must be careful not to violate the fundamental principle that persons must help themselves, or to dilute the local application of educational methods, or to discourage educational experiments by states and localities. We are yet in the experimental stage in education.

We are in danger of confounding education with government. Because we have established centralized systems of police regulation, commerce regulation, quarantine, and the like, it does not follow that we should have centralized federal systems of education. A system of educational administration is not education itself and the two should not be confused.

The country-life discussion is the most important movement at the present time for the establishing of a real industrial democracy, and there is no other democracy than an industrial democracy. The reason why we have not had permanent democracies in the past is because they have not been industrial. If we have a real industrial democracy all the people must contribute to it and take part in it; and the nearer we can approach that result the better our civilization will be. The country-life movement, in all its aspects, is doing more than anything else to contribute this spirit.

* * *

THE YORK STATE COUNTRY-BOND

The York State Country-Bond has been much discussed since it was proposed a year ago, and a good many persons have wondered what kind of an organization was proposed. It is not the intention to found any new society or association for possibly we are tending to over-organize our rural affairs. Many people cannot think of associated or co-operative work without thinking also of constitutions and by-laws and officers and annual dues. A co-operative movement should be projected that has none of these usual elements of formal machinery. It was some five years or so ago that members of the Students' Experimenters' League resolved to bond themselves together for the purpose of furthering agricultural interests. The old students' meeting was the beginning of what has now come to be Farmers' Week. Many associations have gathered themselves around the Farmers' Week epoch, all representing progress in the development of country life. If it is worth while for certain persons to bond themselves together for the betterment of agricultural practice, it is still more important for all the interests representing Farmers' Week to bond themselves together for the betterment of country life in all of its aspects. The best association in the end is that which resolves itself about practical sentiment. Sentiment for country life progress ought to be sufficient to hold together in a loose relationship all interests centered in Farmers' Week.

On several occasions in every Farmers' Week all the different organizations and groups should come together to have discussions on subjects that are of interest to all of them. Every participant in Farmers' Week, man, woman and youth, should consider himself or herself to be a member of the York State Country-Bond, meaning by that that the person is interested not only in his special department of work but also in the progress of the
movement as a whole and that he will
be ready when he goes to his home to
take part in any or all movements for a
growing rural civilization and to lend
his active interest and support to them.
Publications, if there are any, should be
available to all such persons; and
they should all feel such a sense of
personal obligation to the whole move-
ment that they will be able to make
suggestions and to inform themselves
on broad rural movements.

It was the opinion of Director Bailey
that an informal union of all these
forces might really accomplish much
more, through its general spirit of fra-
ternity, than any formal organization
could accomplish even though it com-
prised the very same persons. We
very much need to put ourselves whole
heartedly into these new movements
rather than to feel that we must be
personally subordinated to any regular
machinery of operation. The best
movements in the world are those that
have a spirit in common but that are in
formal ways more or less unorganic.
The Empire State needs a recognized
forward movement for country life, and
such a movement comes naturally out
of such forces as gather at Farmers' Week. The York State Country-Bond
might be another name for a consoli-
dated Farmers' Week; but it would be
better to have the name used to design-
ate the exercises that bring all the
groups into one, as Country-Bond
Lectures, Country-Bond Demonstrations, Country-Bond Conferences, and
the like.

* * *

ADDRESS TO THE NEW STATE RURAL
ENGINEERING SOCIETY

The College of Agriculture welcomes
every organization, new and old, that
has for its purpose the unselfish evolu-
tion of country life. In this spirit we
welcome the New York State Rural
Engineering Society. We hope that it
may organize itself quickly and get to
work with definite problems.

The earth must be conquered and
man must learn to adapt himself to it.
The conquest is to lie very largely in
the application of human ingenuity and
skill to the surface of the planet. Man
multiplies himself and augments his
skill when he operates by means of a
machine. We have suffered much in
times past from the fact that farmers
have not been mechanics-minded. Those who are mechanics-minded have
gone off into cities and into other occu-
pations, but we now see the time when
the farm lad who has a knack for
machinery will find ample opportunity
to express himself directly on the farm
and to satisfy his desire for wheels, pulleys, cogs and prime motors. A
rural engineering society could exer-
cise a tremendous influence in develop-
ing this spirit amongst the country
folk and thereby make country life
much more effective than it ever has
been before. The conquest of the
surface of the earth lies very largely
with the farmer and with the mechanic
and engineer.

We have given much attention to the
study of the chemical and biological
aspects of agriculture, in soils, fertili-
zers, spraying materials, feeding ani-
imals, breeding, and the like; but we
have given relatively little attention to
the real principles that underlie good
farm machinery and good farm en-
gineering. There has also been a wide
separation between the manufacturers
of farm machinery on the one hand and
the farmer on the other. There has
been no means whereby the two could
come together for the discussion of
their common problems, and whereby
rational and unbiased tests could be
made in a broad way of all the tools,
contrivances and machines that are
applied on our farms.

As an administrator of an educa-
tional institution, I have been much
interested in the past few years to see
the development of the taste for
mechanics and machines and engineer-
ing in the minds of farm boys. The
development of machinery for the land
has really only begun, although we
have come to think of the American
farm machinery as having solved our
mechanical problems. The introduc-
tion of the internal-combustion engine
has brought with it a whole new set of
problems and of possibilities. We now know that we can install an engine to do the work of much of the hired help, and at the same time accomplish more work and more effectively. We shall now find a whole series of minor machines and devices for the farm and also for the kitchen and household arising from the gasoline engine. We are also beginning to utilize the small water power in our hill country, and we shall use wind power. We shall be able to light our buildings and to make the farm mechanically as effective as the city occupations and city homes. I think that we are yet scarcely in sight of the evolution that the application of machinery and of engineering is going to introduce in the rural districts; and all this machinery will make the farm not only more effective but very much more attractive to inquisitive young minds.

I hope that this society may do something to bring about a real rural interest in the testing of farm tools and machines. Why should not a good plowing-match be the center of a local fair in a rural community? Why should we not again have something as good as the Utica plow-trials of forty or more years ago? Why should we not encourage the inventiveness of all the boys on the farm to improve machinery so that it will exactly fit rural conditions? We are breeding animals and plants; why should we not also teach the improvement of tools and implements and machines and farm roads and all the rest? Why should there not be some recognized way of testing farm machinery so that standards may be developed and reliable publications may be produced? The whole question of the development of the mechanics-mind and engineering-mind on the farms is now before us, and this society comes in the nick of time.

* * *

THE EDUCATIONAL POSITION OF THE MARKET-GARDENER

The men who follow the pursuit of market-gardening usually live in special regions, and mostly in very close relation with some large city or with some direct means of communication. Their lines of work and direction of thought have more or less isolated them from the large body of agriculturists. Although living close together in special areas, they have not been effectively organized, undoubtedly very largely because they are such strong personal competitors. On all the large questions of public policy, however, their interests are identified with farmers in general. All the technical and scientific problems relating to soil, fertilizer, crops and management are purely agricultural questions. They would profit greatly by a close association with the agricultural interests; and the agricultural interests in turn should receive very great help from the market-gardeners in the way of good instruction in intensive tillage and high cropping.

The organization of the New York State Vegetable Growers’ Association last year probably marks the beginning of an epoch in the vegetable-gardening business of the state. The problems common to the business will be discussed in this Association; and as the Association meets at Farmers’ Week in connection with other agricultural interests, it will find itself articulated with the general discussion of country-life affairs. The vegetable-gardeners will contribute their skill to the discussion of many of the questions involved in the situation.

The vegetable-gardeners need to organize themselves educationally. They have not had close relation with the agricultural educational institutions. One reason for this is that the institutions themselves have not been prepared to meet the needs of the vegetable-gardeners; but this situation is now beginning rapidly to change. The institutions will now meet the situation as rapidly as the market-gardeners demand that it be met. It is coming to be a habit amongst certain groups of farm people to send their sons and daughters to college to receive an education by means of agricultural subjects. This habit should be formed
by the market-gardening people. The progress of the business will depend in the long run on the special education that the sons and daughters of the business receive. The educational outlook on market-gardening will in the end be of more service to it than any other outlook or movement touching its public relations.

* * *

THE NEED OF A UNION OF DAIRY INTERESTS

In welcoming the annual meeting of the Dairy Students' Association at Farmers' Week, Director Bailey urged that the manufacturing and commercial dairy interests of the State organize as an industry for the purpose of safeguarding their common welfare and of developing their business educationally. There are about twenty-three hundred dairy establishments in the State, representing cheese factories, creameries, skimming stations, and shipping companies. These represent the commercial dairy interests of the State aside from the personal or farm-dairy business. His suggestion was to the effect that these twenty-three hundred organizations might contribute pro rata a certain sum of money for the purpose of providing a fund that would employ an agent to look after their common interests in the way of legislation, transportation, marketing, and the like, and to have a small margin that could be devoted to public welfare work in dairying. Such organizations exist elsewhere; and there is a national organization that is established on a similar basis. The common commercial problems are sufficient to call for such a plan of working together; but the educational results that necessarily would follow such an organization would probably in the end comprise the greatest benefit. Director Baily had no suggestions to make as to the machinery of such an organization; but he recommended that the dairymen come together on the basis of financial contribution and for the purpose of maintaining organizations that would be continuously active through the year and that should meet the practical problems that come before the commercial dairymen or associations of dairymen from day to day. Such an organization should not attempt to control production, or to control prices; but it could have great influence in regulating practices, in finding markets, in preventing waste, and in exercising wise influence on legislation affecting all the people in the dairy business.

DEPARTMENTAL ACTIVITIES DURING FARMERS' WEEK

DEPARTMENT OF PLANT BREEDING

A new phase of conservation was put forth in the remarks of Dr. A. W. Gilbert of this University in an address during Farmers' Week. He showed how greater yields per acre of potatoes and such staple crops could be produced without the addition of a very large amount of plant food. He told how we may better feed the millions without an excessive drain upon our soils. Plant Breeding can do this for the farmer by giving him better varieties with higher yielding powers.

The average yield of potatoes in New York State for the last ten years is very low, less than 90 bushels per acre. Some years drought causes these low yields, but the chief reason is the lack of highly bred seed. In the course of his remarks, Professor Gilbert pointed out how yields of 300 bushels or more per acre might easily be obtained if they had good care and the proper strains were used. These great yields may be obtained without the addition of excessive quantities of fertilizer which needs to be conserved if our agriculture is always to flourish.

The same methods are used in breeding plants as in the breeding of animals. The best individuals are sought and
used to breed from for the production of future races. Thus, in the course of a few generations of pedigree breeding, a strain may be produced of high yielding capacity.

* * *

Dr. H. J. Webber, Professor of Plant-Breeding in the New York State College of Agriculture, in his address on the "Improvement of the Hay Crop" before a general audience in attendance at Farmers' Week, gave the results of important investigations in the breeding of timothy. As timothy is the most valuable crop cultivated in the State, these results should be of great interest to farmers.

In 1910, seventeen new varieties gave an average yield per acre of 7,451 pounds and seven check plats planted with good ordinary timothy in the same year and under the same conditions gave an average yield of 6,600 pounds per acre. The seventeen new varieties thus gave an average increase per acre of 851 pounds.

Ordinary timothy usually begins to deteriorate very soon after planting and meadows run out so that fields are rarely kept in timothy more than two or three years. The new sorts, on the other hand, have been selected for their great vigor, rust resistance and length of life. They would, therefore, be expected to improve for several years rather than run out. This factor is shown in the second year crop. In the season of 1911, the seventeen new varieties gave an average yield of 7,153 pounds per acre, while the seven check plats only gave an average yield of 4,091 pounds per acre. The average increased yield of the seventeen new sorts in 1911 was thus 3,062 pounds per acre, being an increased yield of over one and one-half tons per acre. A bulletin describing these experiments is now in press and may be obtained by writing to the College.

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DEPARTMENT OF DAIRY INDUSTRY

Butter and cheese makers should be good judges of the products they are making. It is hard for a man who is tied to one place nearly every day in the year, which is true of the butter and cheese maker, to become a good judge. In view of the educational value to the manufacturer of inspecting and comparing butter and cheese of various qualities, the Department of Dairy Industry organized an amateur judging of butter and cheese contest as a part of Farmers' Week program. To intensify the interest the department offered a premium to the winner, of a gold filled Cornell University seal watch fob, and a sterling silver fob of the same design to the man taking second place.

Ten 60 lb. tubs of butter from Specials to Seconds and cheese of different makes were secured from the New York market.

The ten samples of cheese were scored separately by Mr. G. A. Smith of the Agricultural Experiment Station at Geneva, Mr. Clayton Dutton, agent of the N. Y. State Department of Agriculture, and Mr. W. W. Fisk, of the Department of Dairy Industry at Cornell University. After all the judges had placed their scores on all of the packages the average of their reports was taken as the final judgment. The butter was scored by Messrs. H. L. Ayres and E. S. Guthrie of the Department of Dairy Industry at Cornell University. The final score was reckoned in the same way as in the cheese.

The contestants' papers were marked and the winners ascertained as follows: For instance on the butter, fifty per cent of the consideration was on the score and fifty per cent on the criticisms. On flavor, if the contestant was not further than one point from the average of the judges' score, he was given a perfect mark. Further than one point he was cut one per cent. for each one-fourth point. On body, if he scored not further than one-half point from the judges' he was given perfect and then cut one per cent. for each one-fourth point. On color, salt and package if the score was not the same as the judges' a cut was made at the same rate as on flavor and body. The criticisms were read to the judges by a
clerk and the averages of the grades were used in placing the contestants. The judges had no idea whose papers they were grading until the clerk announced that the job was done.

Mr. J. B. Rowe won first place in butter and E. A. Beckwith second place.

Mr. A. W. Beaupre won first place on cheese and Mr. J. H. Kelly second place.

* * *

An address was given on the tests and control of moisture in butter by E. S. Guthrie. It was stated that the farmer and creameryman in the making of butter were in the field of the pure food manufacture and that it was right that his operations be controlled by law. The audience was given to understand that according to a regulation of the Internal Revenue Department butter containing 16% or over of moisture was considered adulterated. A heavy taxation was made on such butter. Also the maker must take out a license for making adulterated butter. A few students assisted the speaker in the operation of a moisture test and the process which is as simple as the running of a Babcock test for fat in dairy products was explained. The speaker tried to make it clear to the audience that the factor that is most important in the controlling of moisture incorporation in butter is temperature in the cream during the churning process and in the butter at the time ofworking. If the temperature is high in the cream a high amount of water will be incorporated in the butter and in the working process more moisture will be expressed when the temperature is low.

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DEPARTMENT OF FORESTRY

Professor Walter Mulford of the newly established Department of Forestry took up the subject of the forestry problem in New York State. Professor Mulford stated that about 40% of the land of New York received no special care except the fire protection given by the State Conservation Commission and some private owners of forests in some parts of the State. He claimed that New York State is neglecting the chance of raising the best timber crops on about 12,000,000 acres. This land at present is covered with uncared for timber or brush or is bare. The State Conservation Commission and many private owners are doing splendid work in planting forest trees, but the area thus covered is exceedingly small compared with the enormous area receiving no care other than protection. This area may be roughly divided into three parts: The Adirondacks and Catskills (about 6,000,000 acres); the farm woodlots (about 4,000,000 acres); and the wooded hills and extensive stretches of sandy or rocky non-agricultural lands (about 2,000,000 acres).

Professor Mulford said in part:

"The forestry problem of New York State is, therefore, to aid the State Conservation Commission in increasing the amount of care given to the mountain sections; to improve the farm woodlots; and to make possible by proper legislation the care of the large forest areas outside of the mountains by allowing them to be bought and managed as county forests wherever desirable. Such county forests would keep the non-agricultural lands usefully busy and would go a long way toward paying county taxes. County forests have long been in use in Europe and found very successful. They form one of the central features of the European forestry system, where they pay almost, if not all, of the county taxes. The city of Zürich, Switzerland, has a city forest which has been under management for about one thousand years. This forest of only about 4000 acres now pays a large part of the city taxes. The State of Pennsylvania has already made the establishment of county and city forests constitutional."

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DEPARTMENT OF HORTICULTURE

On Friday of Farmers' Week delegates from various florists' societies and clubs assembled at the College of Agriculture to consider the organization
of an association of persons interested in floriculture. In welcoming them to the College of Agriculture, Director Bailey called attention to the great importance of floriculture in the state as represented by the census figures. In the twelfth census, the value of florists' crops was ninth among the agricultural products of the state, being exceeded only by such staple things as hay and forage, potatoes, orchard fruits, corn, forest products, and the like. The value of flower crops were nearly three million of dollars. Probably few people realize how extensive the floricultural business is and how much the output is worth.

Probably the florists are the most skillful of all classes of farmers in producing great yields from the soil. A greenhouse man will grow a begonia that is several times larger than the soil and the pot in which it is grown. He gets as near the maximum result from a given quantity of soil as any person is able to secure. The educational importance of this fact also cannot be overlooked. The people should understand what are the possibilities of a handful of soil.

These remarks are made for the purpose of emphasizing the educational significance of floricultural operations as well as their importance as measured by census figures. An industry as important as this ought to be represented in organization. Florists' clubs and societies in New York are now all local. It would be inadvisable to lessen the work or the importance of any one of these local units, for each one has an important work to do; but a delegate society could guide florists' affairs and could unite the different clubs to the benefit of the occupation as a whole. It has been said that the florists have never asked anything of the state that has been granted. If this is true, it shows either that they have no needs that the state can supply or else that they have not asked effectively. It may not be important for the florists to organize for this purpose, but this is an illustration of the fact that there has not been a solidification of effort. There are great problems of transportation, marketing, and other semi-public questions that a state organization could attack with great profit to the business as a whole, as well as technical questions that might be discussed for the information of individual florists. State interest in floriculture should be represented in organization.

**COÖPERATIVE MARKETING**

*By Lloyd S. Tenny*

Formerly connected with the United States Department of Agriculture at Washington, D. C.

(Continued from the March number of the Cornell Countryman)

Would that our fruit men located around Rochester might take notice of what has been accomplished here in California. How crude and amateur-like our efforts in the way of marketing fruit appear in comparison!

While it is necessary to have an incorporated body, yet the capital stock must be put in on the non-profit, or stated profit-sharing basis. Let me be very clear and specific with regard to this point, for it is vital. Many organizations have failed because of disregard for this point. The capital stock for a local association, such as we would need at home, must come from the growers. If we needed five thousand dollars and had one hundred growers, then each grower should take out fifty dollars of stock. Where it is not possible to have things come out so evenly as this illustrates, then there should be a regulation which will prohibit any one grower taking over a certain specified sum. No one man should or can predominate in the financial part of an organization. They should share as nearly as possible alike. No man should put money into capital stock expecting to get large
returns. He should be satisfied with no returns at all. It is taken for granted that he is putting his money into the association, not to make large interests on this meagre investment, but to establish, or for the purpose of establishing an organization which will market his fruit at satisfactory prices.

It is well to have stated in the by-laws of your constitution that no dividend greater than five or six per cent. annually shall ever be declared on the capital stock. If your association finds at the close of its year’s business that all expenses have been paid, a six per cent. dividend declared, and yet there remains a comparatively large sum of money in the treasury, then it should return this sum, or as much of it as it wishes to the shippers— who will be stockholders that is true—but the return should be made in proportion to the number of boxes, barrels, or cars of fruit each shipper has marketed through the organization.

The idea, therefore, of having a manager or any officer attempting to get his salary in whole or part, from dividends declared from stock, is wholly out of keeping with successful cooperation. Stock watering is unheard of in such an organization. These points are vital for the success of a united effort, and yet they are often violated in attempting cooperation.

Another point which has caused much discussion, and has been at the root of considerable trouble is the relation between the central organization and its individual members. How shall these members be bound to the organization? As an individual wishing to join the association, must I be compelled to ship all of my produce, or a certain definite portion of it, through the exchange; or may I use my choice, shipping if I so desire, or selling outside if that method suits me better. It would be very nice if this last method were possible. It appeals especially to the one inexperienced in cooperation, but a little serious thought on the subject will convince anyone that the only successful plan will be the one, where the individuals are bound by a contract to ship through the organization. Without such a contract, how can the manager know what business he can expect? He arranges an office force, makes contracts of various kinds, expecting to have, let us say, two hundred cars of peaches to ship. But fall prices may be high. The farmers may be entirely satisfied with the offers made to them by local buyers. If there is no contract to hold them to the association, they will sell, and where is our poor manager left? His contracts are already made. He has nothing with which to work. The cooperative efforts are a failure. Moreover, if you are to start a cooperative association for marketing your fruit, you are in a way becoming a competitor of the local fruit buyer. If, as a member of the association, you are permitted to sell outside, you are really selling to your own competitor. One of the simplest methods employed by unscrupulous buyers to break down a cooperative movement among farmers is to try to buy fruit or produce from members of the association, offering if necessary, sums larger than the markets will warrant. In this way, ignorant and inexperienced farmers, become dissatisfied and either try to withdraw bodily from the association, or they cast a feeling of discouragement among their fellows or attempt to show that the manager is not capable of getting the prices offered by the outside buyers. While there are some exceptions it is the general rule that in order to be a success your association must make a written contract with each individual shipper, compelling him either to ship all or a certain portion of his produce through the central exchange, or in case he does not, to pay to the treasurer of the association a certain specified amount for each package sold to an outside buyer. It is pretty well established that such a contract is perfectly lawful and will hold in court. The courts of California have so held and I understand that it has been established as lawful in other states.
Very recently a county judge in Iowa ruled that such an agreement is unlawful and is made in restraint of trade. It is very doubtful, however, if the Supreme Court of the state will uphold this decision.

These four principles, discussed already, lie at the base of successful cooperation in my opinion.

1st. There must be a common need, or at least some common ground between the farmers or fruit-growers.

2d. The organization must be an incorporated body. A loosely formed agreement will do as long as everything goes smoothly, but will not hold together when trouble arises.

3d. The money for the capital stock must be put in on a non-profit sharing basis. The organization should not be run in other words to make money on the money actually invested. The purpose of the organization is primarily to sell fruit—to reach other markets—to make more money growing fruit. The capital stock is necessary to bring about that end, but is only a means to another end.

4th. In the last place, there must be a second contract between the central organization and the individuals shipping through it. A simple promise on the part of the individuals that they will ship is not sufficient.

If these principles are thoroughly understood at the time of organizing, and if the members join, understanding them, there is a pretty good chance for the association to live and to be a success.

An objection to cooperation, at least to a cooperative packing house, is that a grower loses his identity. To some extent this is certainly true. It is possible to have cooperation where each grower packs his own fruit and even where the individual lots are sold on their own merit. This method is better than no cooperation, probably; but in actual working it has not been very successful, and one of two things has usually followed. Either the effort to cooperate has finally ended in a failure, or the growers have decided to "pool" their fruit—that is to mix their fruit, giving the growers credit on each load for a certain amount of each grade. The various prices received for any one grade during a certain period are averaged and every grower receives this average price for all the fruit of that grade contributed by him during the specified period.

This practice of pooling their fruit is followed in the California Fruit-Growers' Exchange and in the Florida Citrus Exchange in handling oranges. While the individual does not keep his identity in selling, yet there is an additional incentive for him to grow good fruit in order to have his fruit grade as high as his neighbors, who may be shipping through some exchange.

The greatest objection in not pooling is that it is difficult to maintain by other methods a sufficiently high standard of grading and packing, without which cooperation never attains its best results. A fake pack, poor apples in the middle of the barrel and good ones at the end, peaches packed by the stovepipe method, and all such absolutely dishonest practices can never be practiced in a cooperative association, where a brand is being established and where the pack is being guaranteed.

CAUSES OF FAILURE IN COOPERATION

Failure in cooperation may be due to violating any of the fundamental principles already discussed. On the other hand a group of men may set out with a perfect organization and yet fail. Farmers, in general, will over estimate their own capacity. Many are distrustful, not willing to give up as large a portion of their farming operation as marketing their fruit to another man. Possibly over-conservatism is a better term to express this idea. To succeed you must have faith in each other. You must all stand on the common ground of wanting to better your marketing condition. When discouragement comes, there must be Loyalty, and that spelled with capital letters. Disloyalty of members toward the organization itself, toward the manager
or board of control, or disloyalty even toward other shippers is pretty sure to disrupt the association.

Again, failure may come and very often does through poor management. A man who cannot manage successfully his own business, seldom will answer for a manager for a co-operative association. A broad gauged, keen business man is needed, and such a man costs money these days. A few thousand dollars spent for such a man at the head of a large organization is money well spent. It goes without saying that absolute honesty is necessary. Every act must be upright and above-board. Some associations have failed for want of a sufficiently large sum of money with which to start. The capital stock should be larger than you think at first. There are many unexpected expenses which must be provided for. Even a small association should scarcely start out with less than five thousand dollars available. There are many other things which may disrupt a co-operative movement, but if there is a loyal bunch of men back of the movement these difficulties may easily be overcome.

But what lessons are there in all this for us—for the men engaged in growing apples, and pears and peaches and other fruits here in New York State? To make it more definite and to bring it home more forcefully, would the village of Hilton for instance, gain anything by a cooperative association, and by this I mean a real association, alive, active and doing business? Would it be reasonable under the conditions which exist there to expect such an organization to succeed? A body of farmers, largely potato growers, in Monmouth County, New Jersey, had this same question for discussion four or five years ago. They decided in the affirmative and organized the Monmouth County, New Jersey, Farmers' Exchange. During 1908—their first season—business amounted to something over $450,000.00. Last season, 1910, two years after beginning, the sum of business reached over $900,000.00. The total business for 1911, the figures for which have just been issued in the Treasurer's Report, reached the immense sum of $1,499,500.00, lacking but $500 of making a sum equal to one and one-half million dollars. This certainly can be counted a success. The following is a statement regarding this co-operative association, taken from the American Agriculturist which is of interest.

"Just as in other cases, this exchange had to fight intrenched interests which did not wish to see the farmers succeed. These interests adopted all the tricky tactics that have been the ruination of scores of exchanges all over the country. The principal dodge is to encourage the farmer to be disloyal to the exchange by inducing him to accept a few cents more than the exchange price. This is the deadliest weapon that the middleman can use."

The General Manager in his report says:

At an annual meeting a year ago, our membership was 735. It has now reached 1049. At the close of 1910, our paid in capital stock was $49,370. In the year, this increased to $74,285. At a recent directors' meeting a dividend of 5% was declared.

About July 1, 1908, before we had really done any business, standing here in this court room, we made this statement: "You have started out to establish a business of your own that will grow to be greater than you in your wildest fancies have conceived; not a $1000; nor a $10,000; nor a $100,000; nor yet a $500,000 business; but a business that inside of five years will reach $1,000,000 a year." This statement was looked upon as perhaps a possibility but not at all likely a probability, and yet, gentlemen, we are here today to say that this prediction has now become a reality.

Our total business for the year, 1911, is $1,499,500. Do you fully understand just what an immense business this is? There is no reason why Hilton and other neighboring towns cannot organize and support such an organization.
THE TWELFTH ANNUAL BANQUET
By E. C. Heinsohn, '15

THE Twelfth Annual Banquet of the College of Agriculture, held in the Armory, February 21, proved to be even larger and more successful than those of former years. Fully six hundred guests sat down at the tastily arranged tables and partook of a most excellent dinner. While the dinner was being served, the banqueters were entertained by numerous selections of popular airs furnished by Coleman's Orchestra.

After the dishes had been cleared away, the toastmaster, H. B. Knapp, '12, introduced as the first speaker of the evening, Mr. L. C. Corbett, '90, of the United States Department of Agriculture, who spoke in behalf of the Alumni. The alumni, said Mr. Corbett, are united and organized in the Students' Association to aid in the extension of agricultural information.

The next speaker, Prof. A. W. Gilbert, representing the Faculty, described the relations existing between the students and teachers. Instruction does not count for everything; students develop more outside the classroom than in. The duty of the faculty, he continued, is to train men to be leaders and if success is to be attained, students, alumni and faculty must cooperate. In conclusion, he declared that there are four things which a farmer should do: he should be able to make a good living on his farm; raise and educate a family; be a useful citizen; and finally leave his farm in better condition than he found it.

David Elder, '12, then spoke in behalf of the students. In a plea for unity, he stated that the students should organize while here so that when they leave to go out into the world, they can be a solid unit. With united effort, in the future we can help to make agriculture the stay and strength of the nation in time of war and the support in time of peace.

Hon. James W. Robertson, of the Department of County Life of Canada, was the fourth speaker. In regard to "Education for Rural Life," he declared that it is the work of Cornell students to put life, strength and vitality into the rural community. It is the duty of the younger generation to check the modern tendency to seek the easy path in life for in the accomplishment of worthy undertakings hard work is necessary.

"Uncle Henry" Wallace of Iowa followed with a powerful address in which he outlined the moral and educational forces at work for country life. The students of Cornell, he said, are helping to build a fine rural civilization. "When you return to your homes, so far as God helps you," he exclaimed, "make the community wherein you live a better place, better in society, better in manners, better in farming, better in everything, because you live in it." No civilization ever has or ever will endure after its agriculture goes down and there is no country that would not be better for its further development.

Dean Bailey was next called upon for remarks. He spoke about opportunity and its importance in life. If any successful business man be asked when the turning point of his life occurred, he will probably answer that it was the result of an accident. Therefore, we should always be alert and ready for opportunity. If our lives show integrity, honesty, and a desire to do our best, and if we take advantage of every opportunity, we surely will make a success of life.

The last speaker of the evening was Prof. Shearer. With stereopticon views he described the development of Cornell University, showing how it began with Sage Chapel and a few wooden buildings and grew to its present size. His views and remarks vividly brought to attention the wonderful advancement which Cornell has made.
The Cornell Countryman

ALBERT H. WHITE, Editor
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H. ERROL COFFIN - - - Artistic Editor
ORRIN M. SMITH
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The Cornell University Club of New York held its thirty-second annual dinner on March the fifth, 1912, in honor of Dean Bailey. The dinner was of special significance, not only because of the high tributes and praise paid to the Dean for his contributions to agricultural education, and particularly for his work in the Cornell College of Agriculture; but also because the recognition thus given by the alumni of all the Colleges of Cornell, to Dean Bailey in his position as director of the College of Agriculture, marks a distinct and momentous step forward in the process of evolution of the College of Agriculture, and even in all agricultural science; for by such recognition the Agricultural College is placed on a plane with the other colleges of the University, and the science of agriculture on a plane with other sciences.

The College of Agriculture in its early days, was looked upon somewhat in the light of a trade school, and the "Aggies" were treated more or less as a joke, by the cultured "Highbrows" of the institution; and in fact, in certain large universities, where the agricultural college is segregated from its university, this condition actually exists today to a greater or lesser degree. Fortunately, the founder of Cornell, with his rare foresight, and democratic ideals, so started this institution that the Agricultural College, and the other Colleges should grow up side by side. From the first, the standard of the College of Agriculture has been gradually rising till today it is ranked at least as high as the other Colleges of the University, and the constant association of the students of this college with those of the other colleges, in all University activities, and on an equal basis, has brought the latter students to a realization of the standard of the College of Agriculture, until now all the alumni of the University are openly recognizing this college, as evidenced by the New York and other alumni dinners, given this winter in Dean Bailey's honor. A few details of the New York dinner may prove of interest.

There were more than 350 diners present in the big ballroom of the Waldorf. They sang "Alma Mater" before they sat down, and drank a toast to the President of the United States before the speaking began. The dinner was in honor of Director Bailey, and all the speakers told in what honor he was held not only at Ithaca, but everywhere else. Andrew D. White sent a letter expressing his admiration of Mr. Bailey, and so did President Schurman, who was unable to be present on account of a death in his family.
The cover of the menu card was a drawing by André Smith, '02, depicting the energy and multifarious activities of Dean Bailey. Singing was provided by members of the University Glee Club of New York, who were led by Bob Burns, '07.

Louis A. Fuertes, '97, was toastmaster, and with him and Dean Bailey at the speakers' table were Ira A. Place, '81, president of the Cornell Club; Mirza Ali Kuli Kahn, the Persian Minister; W. C. Brown, president of the New York Central Railroad; Dr. Harvey W. Wiley, Dr. L. O. Howard, '77, Oscar T. Crosby, J. A. Holmes, '81, G. A. Post, J. G. White, '85, R. J. Le Boeuf, '92, John DeWitt Warner, '72, General Stewart L. Woodford, Dr. W. M. Polk, Dr. A. H. Sharpe and others.

Mr. Place took advantage of his position as presiding officer to hand the first bouquet to Director Bailey. He said that we had many men who could teach farming, but only one man who could idealize farming—raise it above the level of the earth into the realm of the ideal. Then he surrendered the gavel to Louis Fuertes, who was welcomed with a short yell and an "Ach, Louis!" Dr. Howard was the first speaker called on. He told some good stories and wound up by saying that Bailey was by far the strongest attractive force in the faculty, and that if he ever thought of leaving again the people up at Ithaca must lock him up in that beautiful new agricultural building and keep him there by force.

Then Director Bailey was called to his feet with the long yell—Cornell's twenty-one gun salute. So many kind things had been said of Director Bailey that when he had a chance to speak he said he knew now how the pancake felt when the molasses was poured over it. He told about his early days as a boy on the farm and said that even then he wondered if the birds and the flowers—all the environment of country life, in which he was so much interested, could not be made parts of a scheme of education that would quicken and enrich the life of the people who get their living from the soil. He said he loved the country folk whose parents and grandparents were farmers before them.

He had tried to catch their point of view and to find the education that would benefit them. The work of a college of agriculture was not teaching only, he said. It was welfare work, too. He spoke a word for the short-course students, saying that their presence helped to keep the college true to its ideals and to keep it from getting into a rut. He showed how undeveloped were the forests and the streams of New York State, and how it was one of the duties of agricultural education to develop these resources for future generations. But most of all he talked of developing the resources of country life so that the lives of the people may be fuller and richer. Dean Bailey said that the College of Agriculture at Cornell was now having its turn in growing large. He thought the present rate of increase in the number of students was not likely to last. He expressed his gratitude to the Board of Trustees, which had supported him at times when his ideas had to be taken on faith. He concluded by reiterating his desire to get out of harness and give his time to studies of which he had dreamed all his life, and said that when the time came for him to resign
the work of the college to other hands he hoped his friends would let him go.

Then Dr. Wiley and Mr. Brown took their turns at speaking well of Dean Bailey, as did Mr. Oscar T. Crosby, engineer, author and traveler, and lastly his excellency the Persian Minister, gave an interesting and charming talk, in which he quoted Persian classics of a period 3,400 years before Christ wherein the tilling of the soil was glorified as one of the noblest of occupations.

The spring season of Inter-College Athletics the inter-college athletic activities opens with Agriculture five points in the lead, but the champion-

experience with tile drainage which are regarded as the most forceful argument in favor of this type of improvement.

Special emphasis in the discussion was laid upon the desirability of agricultural associations throughout the state giving at least one meeting per year to the discussion of drainage in their community. Mr. Schoenthaler said in his prize paper that tile drainage, of which he has some six miles in all, has more than doubled the value of his farm, and instead of being obliged to "mud-in" his crops, waste seed and labor and get meagre returns, he now never gets a poor crop on his drained land. He says it is like putting money in the bank at from one to two hundred percent interest.

Resolutions were passed strongly urging that the State establish provisions for loaning money to farmers for the purpose of tile drainage under the supervision of the conservation commission, and with suitable facilities for oversight. A resolution was also passed which emphasized the importance of investigations into a number of phases in the construction and operation of tile drains, particularly the rate of drainage of different soils with different arrangements and depth of drains, quality of tile, etc. It was also agreed by resolution that the matter of freight rates on tile should be investigated, and a committee for that purpose was appointed.

The officers elected for the ensuing year were: President, Irving C. H. Cook, South Byron; Secretary, Elmer O. Fippin, Ithaca; Treasurer, C. R. White, Ionia. Mr. James A. D. S. Findlay, of Salisbury Mills, was appointed Chairman of the Legislative Committee; C. R. Mellen, of Geneva, Chairman of Committee on Publicity; T. E. Martin, of West Rush, Chairman of Committee on Freight Rates.
Bids for the new Auditorium of the College of Agriculture and Veterinary Clinic and Hospital buildings have been opened by Treasurer E. L. Williams and the contracts awarded. Eight general contractors representing concerns located in Lowell, Mass., New York City, Buffalo, and Pittsburg figured on the buildings. August Metz Bros., of Buffalo, bid lowest, and as the figures came within the appropriation for each building, were given the contract. It is expected that they will be completed on or before Nov. 1, 1912.

Mr. Green of the firm Green & Weeks, architects, remained in Ithaca with the contractors to arrange details necessary to enable them to start work immediately. The auditorium will be an imposing structure of brick and stone and will seat about 3,000 people. The Veterinary addition will consist of a main building with two wings. The structures will be of brick with limestone trimmings.

Thirty-one members of the senior class in the College of Agriculture availed themselves of the new privilege of graduation in February. Many of these have left the College in order to take up positions but quite a number have remained to take up graduate work. The list of graduates is as follows:


The Extension Department has been very active among the farmers of New York State during the past month. Schools were conducted for a week at Kinderhook, Mountainville, Keuka Park, Salamanca, and Albany. The following day's program for the school at Keuka Park is representative:

9:00-10:00 A. M. Lesson—Corn culture for New York State

C. H. Myers

10:00-12:00 A. M. Lesson—Diet and hygiene Mrs. Ida S. Harrington

11:00-1:00 A. M. Lesson—The peach orchard

A. C. King

11:00-12:00 A. M. Lesson—Under-drainage in the vineyard

P. E. Gladwin

1:30-3:00 P. M. Lesson—Clovers; their relation to other crops

E. R. Minns

2:00-4:00 P. M. Lesson and demonstration—Sugar cookery

Mrs. Harrington

3:00-4:30 P. M. Grape diseases and their control F. E. Gladwin

The Department has also planned to hold meetings in 32 rural districts.
of the state during March. An address by a member of the faculty of this college will be the feature of these meetings.

A new scheme to be inaugurated April 1st is the traveling school. A farm special will be run over the Delaware and Hudson Railroad from Binghamton to Peru, Clinton County. This train will include laboratory cars for the definite study of plant diseases and insect pests, farm crops, animal husbandry, and domestic science. One or two coaches will be used for lectures on subjects of vital interest to the communities visited. The educational features of the train will be in charge of this college. It is gratifying to note that stops of one-half to one day will be made at regular scheduled places so that the farmers may have the benefit of three to five hours of consecutive study in this traveling school.

During a recent visit of Professor Roth to Ithaca arrangements were completed for the new school of forestry which is to be a part of the College of Agriculture in full operation at the beginning of the next college year.

The faculty has approved the following plans: The course is to cover five years leading to the degree given to the other students in the College of Agriculture at the end of the fourth year.

It will be arranged so that men who wish a shorter course can obtain a knowledge of elementary forestry in two years. The latter course is intended for students who wish to prepare for the management of small forest properties, to act as wood foremen or as forest rangers.

The Department of Forestry will also offer courses to the general agricultural student who is interested in the handling of the farm woodlot.

Extension work will be conducted by the department in order to aid in the movement to improve the woodlots of this state. Altogether forty university hours of technical forestry courses will be given.

One hundred and twelve students registered in the first class in farm forestry under Professor Bentley.

The delegates from the various floral organizations met here during Farmers' Week to organize the New York Federation of Floral Clubs. Mr. W. F. Kasting of Buffalo, was elected president and John Young of New York was elected secretary. Professor Beal of the Department of Horticulture was appointed a member of the executive committee.

The organization represents four thousand florists. Floriculture has rapidly grown in importance in this state. Dean Bailey stated in his address to the organization that the total value of the flower crop was ninth in importance in the last census. It is hoped to federate all the florists' organizations in the state so that they may act together in promoting the art of floriculture and gardening under glass.

There are a number of students who desire summer farm work. Some of these who have lived on farms, need money, and others want practical experience. Most of these students will be ready to begin work about the middle of June. Now, former students and other friends of the College of Agriculture, take this opportunity to help the present students. If you have need of help during the summer, write to the college acquainting us with the fact.

During Block week Dr. Gilbert gave a series of lectures at Farmers' and Teachers' Institutes on Long Island, speaking several times at Northport, Bridghampton, Riverhead and Southold.

Professor Cavanaugh addressed the Association of Civil Engineers on the "Destruction of Weeds by the Use of Chemicals" on the evening of March 1, in Goldwin Smith C.

J. E. Turlington, a graduate student in the soils laboratory, has taken his
examination for Doctor's degree. He has accepted a position with the Georgia Agricultural College, and left for that institution in February.

* * *

Professor Stocking made a trip to Cazenovia on March 5, to talk on Clean Milk Production.

* * *

There were fourteen men registered in the one week course for Factory Managers in the Dairy Department during Farmers' Week.

* * *

Mr. G. M. Cosh, gardener of the Horticultural Department, resigned March 1st, to become superintendent of a range of greenhouses which is being erected at Houston, Texas.

* * *

Mr. C. S. Wright, assistant in floriculture has resigned in order to enter commercial work. Mr. Wright is M. S. A., '11.

* * *

Mr. G. J. Burt, B.S., '11, assistant in floriculture has resigned to enter the employ of Townsend and Fleming, Landscape Architects of Buffalo.

The Department of Plant Physiology has developed a new method of growing in pure cultures the nitrogen-fixing bacteria which produce the root nodules of the leguminous plants. These cultures are made in sterilized soil. The practical value of cultures of the alfalfa and soy bean bacteria will be tested on a large scale during the season through material sent to growers in various parts of the state.

* * *

The New York Ginseng Growers' Association held its annual meeting at the College of Agriculture on March 28-30. There was an extensive exhibit of ginseng diseases. A portion of the time was devoted to a ginseng school with regular laboratory work in the Department of Plant Pathology. Professor Whetzel had charge of the arrangement of the meeting. Several members of the college staff were on the program, and Professor W. A. Riley of the College of Agriculture was present and gave a talk. It was expected that Dr. Ernst Bensy of the Michigan Agricultural College would be present and take part in the meeting.

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**GENERAL AGRICULTURAL NEWS**

**FARMERS' WEEK AT THE NEW YORK STATE SCHOOL OF AGRICULTURE**

The New York State School of Agriculture at Morrisville held its Second Annual Farmers' Week during the week of January 22d. Many farmers from the central part of the state were in attendance. Besides the faculty of the school there appeared on the program several noted out-of-state speakers and also representatives of other state agricultural institutions.

Dr. H. J. Webber of Cornell explained the wonderful possibility on the farm for plant improvement. Using corn and timothy hay for illustrations, he showed how the time required for maturing in the former could be materially shortened by selection and breeding, and the need of improvement in the latter. Timothy seed is now sold without any regard to variety although there are just as many varieties as we have of corn or any of the grains, and there is no doubt that the yield and quality of timothy hay would be improved if the farmer would recognize this fact.

On Wednesday evening Dr. G. F. Warren of Cornell gave the results of the agricultural survey of sections of the state and proved with the farmers' own figures the advantages of diversified farming. While a few individuals found it hard to apply the average figures to their conditions, yet it was evident that the farmer who did not carry all his eggs in one basket was the one who was making the most money. Another surprising thing that the fig-
ures showed was the small profits that the average farmer receives for his work and investments and the considerable number who were receiving no more than hired man's wages. The encouraging part of it was that where the farmer used the proper management and business methods the farm paid well.

* * *

SOIL WATER

Investigation on the soil water in certain agricultural sections of the country show that the ground water level is gradually sinking.

The soil water is not only of interest as a geological agent but also as a natural agricultural resource. In very few sections of the United States is there sufficient rainfall during the growing season to promote good growth of crops. The soil water is the reservoir of moisture, accumulating during the non-growing season from which plants get water to promote growth. The fact that the water level is sinking serves to emphasize the importance of the conservation of all the water received by the soil during the year, by drainage, cultivation, etc.

* * *

ANOTHER RECORD OF COW TESTING ASSOCIATION

So much has been said in these columns on the subject of cow testing associations that anything more seems superfluous. However, the following is a sample of the benefits of such an association. A farmer with a herd of eight cows found that in the first month of keeping records he lost 5 1/2 cents per cow. With the results of testing in mind, he sold five of his poorest cows and replaced them with as many good producers, altering also the methods of feeding. At the end of three months he was making a profit of $32.00 per month on his herd which was subsequently increased to $50.00 per month.

* * *

FARM STOCK CENSUS

The Bureau of Statistics of the Department of Agriculture reports that on January 1, 1912, the numbers and values of the farm stock in the United States was as follows:

<table>
<thead>
<tr>
<th>Stock</th>
<th>Numbers</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses</td>
<td>20,508,000</td>
<td>$2,172,573,000</td>
</tr>
<tr>
<td>Mules</td>
<td>4,362,000</td>
<td>$525,600,000</td>
</tr>
<tr>
<td>Milch Cows</td>
<td>20,999,000</td>
<td>$815,414,000</td>
</tr>
<tr>
<td>Other Cattle</td>
<td>37,260,000</td>
<td>790,054,000</td>
</tr>
<tr>
<td>Sheep</td>
<td>52,362,000</td>
<td>181,170,000</td>
</tr>
<tr>
<td>Swine</td>
<td>65,410,000</td>
<td>523,328,000</td>
</tr>
</tbody>
</table>

This is a loss in total numbers of about 3,000,000 head and a loss in total value of $268,000,000 over January 1, 1911.

The loss in total numbers is due primarily to the decrease in numbers of beef cattle and sheep, owing, probably, to cutting up of the western ranges. It might be interesting to see the values per head of the different kinds of stock:

<table>
<thead>
<tr>
<th>Stock</th>
<th>1912</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses</td>
<td>$105.00</td>
<td>$111.00</td>
</tr>
<tr>
<td>Mules</td>
<td>120.00</td>
<td>125.00</td>
</tr>
<tr>
<td>Cows</td>
<td>39.39</td>
<td>39.97</td>
</tr>
<tr>
<td>Cattle</td>
<td>21.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Sheep</td>
<td>3.46</td>
<td>3.91</td>
</tr>
<tr>
<td>Swine</td>
<td>8.00</td>
<td>9.00</td>
</tr>
</tbody>
</table>

It will seem from the above figures that the decrease in value of horses and swine make the total decrease in value as large as it is.

* * *

THE LAFEAN AND THE COLLIN BILLS

The independent fruit-growers throughout the United States who appreciate the need of better prices for well packed fruit, should be particularly interested in the fate of the Lafean bill. This bill, introduced in the House of Representatives, Dec. 9, 1910, and endorsed by the leading fruit-growers' associations of the country, provides for the uniform grading and packing of fruit. If it is passed, as a federal act it will be effective in all the states. Lacking the support of a strongly organized body of adherents, this bill has never been reported from committee for consideration. Right here is an opportunity for the constituents in every fruit-growing locality of the United States to demand of their representative his best effort in securing the passage of the Lafean bill. Each fruit-grower should make it a point to write his congressman a
personal letter showing clearly the
great need of such legislation.
A similar attitude on the part of the
fruit-growers of New York State
would aid materially in the passage of
the Collin bill introduced in the State
Legislature last winter and aiming to
place commission merchants under the
supervision of the State Department of
Agriculture. In fact, the commission
merchants would be subject to the
same regulations that govern the
transactions of banks, trust companies,
and various other concerns which
handle other people's property.

* * *

PAINT ON THE FARM

Farmers' Bulletin No. 474, has been
recently issued to supply information
on the subject of paint around the
farm.

Any man can do an average job of
painting, and can thereby not only
improve the appearance of his place,
but can add greatly to the durability
of the buildings. The expenditure of a
small amount of money and time in
painting a valuable piece of machinery
or a building, will add greatly to its
length of life. In addition to this the
economic benefit of better looking
surroundings for the farm home is
inestimable. Another useful object
accomplished by painting is the im-
proved sanitary conditions of build-
ings and outhouses. The cost of such work
is small, the necessary equipment not
expensive, and with proper care it will
last a long time.

* * *

A NEW SYSTEM OF EGG MARKETING

The system of marketing eggs in
general use in some sections known to
the trade as the "ease-count" system,
has proven detrimental to quality.
Briefly, ease-count buying consists of
the payment of the fixed price which
happens to be current at the time for
each and every dozen which may be
offered for sale, regardless of whether
the eggs themselves are good, bad, or
indifferent. In most cases the only
requisite to consummate a sale is for each
egg to have an intact shell. No more
practical step can be taken in improv-
ing quality than to discard this system
of buying and replace it by the one
known to the trade as "loss-off."

Where the "loss-off" system is in use
the eggs where bought are "candled"—
that is subjected to a test which shows
quite definitely their condition and
quality. By this test, it is possible to
detect "rots," "spots," and other
deteriorated eggs, such as shrunken,
weak, watery and heated eggs. In
paying for eggs bought on this basis,
the "rots" and usually the "spots" and
"bloodrings" are thrown out entirely,
so that they become a dead loss to the
person responsible for them. Such a
classification and method of payment
is a distinct step forward and would
result ultimately in a great improve-
ment in the eggs.

* * *

EFFICIENT USE OF HORSES

According to Professor W. H. Jar-
dine of the Kansas State Agricultural
College, one horse is sufficient for every
30 acres of farm land.

It is generally conceded by those
experienced in farming that the bigger
the horse the better. Draft horses
should be bred up in size as much as
possible. It costs very little more to
keep large horses than it does to keep
small ones, and they accomplish so
much more that they are very profit-
able. A draft horse should weigh at
least 1700 pounds, but is of more value
if about 2000 pounds or over.

Two of the work horses should be
brood mares. They should be with
foal during the light working season
when the other two can do the work.
In a very short time the colts can take
care of themselves and the mares may
be worked with the others.

A horse loses 10 per cent of its
original value each year. Ten years is
the average period of usefulness of the
draft horse, depending, of course, on
the quality of the horse, the kind of
work done, and the care taken of it.

It is well to keep an extra driving
horse for family use, since work often
will be delayed while some member of
the family drives a work horse to town.
BREAKING COLTS

Many good horses are spoiled when colts, by improper training. They may have been teased by children, thus developing a mean disposition.

To make a colt easy to break, one should make friends with it. Gain its confidence by feeding it from your hand, "petting, and carrying. A colt is nearly half broken when you can catch it anywhere.

The colt should first be halterbroke. At first you will need the assistance of a driver, but he should be dispensed with as soon as possible.

A good way to halterbreak a colt is alongside a horse. The rider can act as leader and driver. Some persons tie the colt to the harness of the work horse or trotter. This not only teaches the colt to lead, but also shows it its place. When the harness is to be put on it should be done very gently, letting the colt become used to it. Then drive it, using short lines. When the colt is old enough to do light work give it a few lessons with the wagon, plow, harrow or any two-horse implement, always beside a well-broken horse to act as teacher.

SELLING CREAM BY GRADE

According to the report of Chief Rawl, of the U. S. Division of Dairying, all possible encouragement has been given to the grading of cream at butter creameries, in order that a first class cream may be separated from an inferior one and paid for accordingly. Twenty-eight creameries, in nine different states are trying this plan. At a creamery at Algona, la., a trial was made to ascertain if the farmers could not be induced to supply a higher grade of cream at an extra price. The first grade contains less than 0.2 per cent. of lactic acid, and the second more. At first most of the cream went into the second grade, now more than two-thirds goes into the first and the butter made from the latter brings a premium of about five cents per pound. It is a pity that some such system cannot be applied to clean milk, so that the farmer who delivers clean market milk would receive an advanced price. It is bound to come to that, because it is only just.

FARMERS IN RUSSIA

There has been a total failure of crops in eight provinces in Russia and a partial failure in twelve others. The people are feeding on weeds and the bark of trees.

Before the snow fell women and children collected acorns and ground them up, in an effort to obtain "meal."

Seeds for sowing, worth $2,250,000, were sent out by the home government, but under-officials sold it to prosperous farmers in unaffected districts.

HINTS ON BREAD MAKING

There are several causes for "poor luck" in bread-making. It may be due to poor flour or yeast, to temperature before or during baking, or to improper care.

Bread dough should be kept at a temperature between 75 and 80 degrees F., while rising, to obtain the best results. When double its bulk, it should be put in the oven. If the oven is not hot enough, the bread rises too much. When too hot, a crust forms on the bread too soon. This frequently prevents the center of the loaf from being well baked.

The oven should be about 280 degrees F., when the bread is put in. The bread should remain in the oven when in single pans from forty-five to sixty minutes.

SOME STATISTICS ON BEE-KEEPING

It will surprise most people to be told that there are 3,000,000 bee-keepers in the United States and 30,000 in the state of New York, and that the annual output in New York state in honey is 2,000,000 pounds. St. Lawrence County alone produces 200,000 pounds. These facts were brought out at a meeting of the New York State Association of Bee-keepers, held recently at Syracuse, N. Y., at which fully 200 attended.
FORMER STUDENTS

ROY P. MCPHERSON.

'09, W. A.—Roy P. McPherson of LeRoy, Genessee County, New York, was born on a farm in the town of Wheatland, Monroe County. At the age of four his father moved to the old homestead, near Le Roy, which had been taken up by his great-grandfather in 1801.

His early education was secured at a district school, and the Le Roy High School, from which he graduated in 1905. The fall previous to his graduation, his father was stricken with rheumatism which left him an invalid. This threw upon Roy, as the oldest son, the responsibility of managing the farm as well as the support and education of the family. His mother, who had always been a great inspiration to him, died in 1909.

Mr. McPherson, realizing that more education along agricultural lines was necessary, and being unable to attend an agricultural college at that time, interested seven other young farmers, who were similarly situated, and organized a Cornell reading club. This club held weekly meetings for three winters, secured farmers' institutes, held summer field meetings and in many ways aided the advancement of agriculture in that section.

The great responsibility began to tell upon Mr. McPherson's health and several months were spent in traveling. Upon his return, after an absence of eight months spent in the eastern and southern states, he was thoroughly convinced that the farm still held the greater attraction for him and he purchased the old homestead in 1908.

The winter of 1908 he attended the Cornell Agricultural College taking the Winter Course in general agriculture. He was made president of his class.

Mr. McPherson has specialized along horticultural lines. The neglected apple orchards on the home farm, comprising some two hundred trees, have by careful management been made to produce a yearly average for the last five years of 498 barrels, or gross sales of $1289 per year. Another smaller orchard which the owner threatened to cut down because of its non-productivity was purchased and by intensive and thorough methods, the gross sales for the first year were $5.00 per tree and for the second year nearly $8.00.

His experience has demonstrated to him the importance of early and intensive cultivation and thorough spraying of his orchards and the careful grading and packing of the fruit. About thirty acres, comprising the more uneven fields in the farm, have already been seeded to alfalfa. Mr. McPherson thoroughly believes in the practical value of alfalfa and plans to increase his acreage of it.

Considerable wheat, clover, beans and corn are in his rotations. He depends upon clover and manures to maintain the fertility of the soil. For the last three winters he has given some time to farmers' institute work. His chief subjects are, "The Neglected Apple Orchard," "Building up the Old Farm," and "Soil Fertility."
BREAKING COLTS

Many good horses are spoiled when colts, by improper training. They may have been teased by children, thus developing a mean disposition.

To make a colt easy to break, one should make friends with it. Gain its confidence by feeding it from your hand, petting, and carrying. A colt is nearly half broken when you can catch it anywhere.

The colt should first be halterbroke. At first you will need the assistance of a driver, but he should be dispensed with as soon as possible.

A good way to halterbreak a colt is alongside a horse. The rider can act as leader and driver. Some persons tie the colt to the harness of the work horse or trotter. This not only teaches the colt to lead, but also shows it its place. When the harness is to be put on it should be done very gently, letting the colt become used to it. Then drive it, using short lines. When the colt is old enough to do light work give it a few lessons with the wagon, plow, harrow or any two-horse implement, always beside a well-broken horse to act as teacher.

SELLING CREAM BY GRADE

According to the report of Chief Rawl, of the U. S. Division of Dairy-ing, all possible encouragement has been given to the grading of cream at butter creameries, in order that a first class cream may be separated from an inferior one and paid for accordingly. Twenty-eight creameries, in nine different states are trying this plan. At a creamery at Algona, Ia., a trial was made to ascertain if the farmers could not be induced to supply a higher grade of cream at an extra price. The first grade contains less than 0.2 per cent. of lactic acid, and the second more. At first most of the cream went into the second grade, now more than two-thirds goes into the first and the butter made from the latter brings a premium of about five cents per pound. It is a pity that some such system cannot be applied to clean milk, so that the farmer who delivers clean market milk would receive an advanced price. It is bound to come to that, because it is only just.

* * *

FARMERS IN RUSSIA

There has been a total failure of crops in eight provinces in Russia and a partial failure in twelve others. The people are feeding on weeds and the bark of trees.

Before the snow fell women and children collected acorns and ground them up, in an effort to obtain "meal."

Seeds for sowing, worth $2,250,000, were sent out by the home government, but under-officials sold it to prosperous farmers in unaffected districts.

* * *

HINTS ON BREAD MAKING

There are several causes for "poor luck" in bread-making. It may be due to poor flour or yeast, to temperature before or during baking, or to improper care.

Bread dough should be kept at a temperature between 75 and 80 degrees F., while rising, to obtain the best results. When double its bulk, it should be put in the oven. If the oven is not hot enough, the bread rises too much. When too hot, a crust forms on the bread too soon. This frequently prevents the center of the loaf from being well baked.

The oven should be about 280 degrees F., when the bread is put in. The bread should remain in the oven when in single pans from forty-five to sixty minutes.

* * *

SOME STATISTICS ON BEE-KEEPING

It will surprise most people to be told that there are 3,000,000 bee-keepers in the United States and 30,000 in the state of New York, and that the annual out-put in New York state in honey is 2,000,000 pounds. St. Lawrence County alone produces 200,000 pounds. These facts were brought out at a meeting of the New York State Association of Bee-keepers, held recently at Syracuse, N. Y., at which fully 200 attended.
FORMER STUDENTS

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Mr. McPherson was married to Miss Ethelyn Hull of Madison, Conn., in 1910. They have one daughter, Janet. '80, B. S.—Rutherford P. Hayes, '80 son of Rutherford B. Hayes, the nineteenth President of the United States, is in town for several weeks taking a special course in dairying and fruit growing at the College of Agriculture. Mr. Hayes owns a large farm near Ashville, N. C. He is visiting the college in order to get in touch with recent improvements in agricultural methods. '83, Ph.D.—Arlington Mapes was elected treasurer of the New York State Plant Breeders' Association at the annual meeting during Farmers' Week. Mr. Mapes is running a general farm, with special attention to fruit, at Stanley, N. Y. '87, Sp.—Theron S. Dean has changed his address from 311 Church St., Poughkeepsie, N. Y., to 401 S. Union St., Burlington, Vt. '00 B. S. A., '96, M. S. A.—L. C. Corbett, president of the Students' Association during last year, presided at the annual meeting of the association held during Farmers' Week. Mr. Corbett is Chief Horticulturist in the Bureau of Plant Industry. His address is 535 Cedar St., Tacoma Park, D. C. '01, B. S. A., '07, M. S. A.—Jared Van Wagenen, Jr., was elected president of the Rural Engineering Society formed during Farmers' Week. Mr. Van Wagenen is an Institute speaker, and is running a very successful farm at Lawyersville, N. Y. '96, W. H.—Norman Pomeroy is engaged in fruit farming at Lockport, N. Y. He is specializing in walnut culture, but has five acres of peaches and several small blocks of nursery trees. '96, W. D.—Clarence E. Wilcox is engaged in general farming at Bergen, N. Y. '97, B. S. A.—J. Wheaton Clark is a traveling salesman for the firm Cox Sons & Vining, academic rope makers, with headquarters at 262 Fourth Ave., New York City. '00, Ph.D.—Wilhelm Miller is connected with the editorial department of Country Life in America, published by Doubleday, Page & Co. He has changed his address from Elizabeth, N. J., to Mill Hill, Glen Cove, L. I. '01, W. A.—Harry B. Winters is an inspector of State Farms in the employ of the New York State Department of Agriculture. Mr. Winters attended the agricultural banquet and visited the college during Farmers' Week. '02, Sp.—W. E. Underdown is managing “The Rockland Park Farm,” a 700-acre dairy and poultry farm at Nyack, N. Y. Mr. Underdown was a visitor at the college during Farmers' Week. '04, '11, W. A.—R. R. Gould's address is R. D. 82, Jamestown, N. Y. '05, M. S. A., '07, Ph.D.—J. Eliot Coit, Associate Professor of Pomology in the University of California, has been appointed Superintendent of the Citrus Experiment Station at Riverside. Work on the two-story laboratory and office building for which $25,000 was appropriated by the last Legislature will be pushed to completion. This Station will be developed as headquarters for men engaged in scientific research and investigations in all phases of the citrus industry. '05, M. S. A.—W. S. Thornber is now the chief horticulturist for two large orchard development companies, which have about 7000 acres planted in fruit near Lewiston, Idaho. As part of the community work undertaken by the companies, the Lewiston-Clarkston School of Horticulturne has been organized with Mr. Thornber as Director. Mr. Thornber writes that he would be glad to see any of the college boys who may be going west this summer. '05, M. S. A.—Samuel Fraser was one of the speakers here during Farmers' Week. Mr. Fraser was Assistant Agronomist at the experiment station here from 1904 to 1906. Since then he has been manager of the Wadsworth farms at Geneseo, N. Y. '05, W. A.—N. W. Coe is running a fruit farm at Oswego, N. Y.
'05, W. A.—M. F. Barrus is Assistant Professor in Plant Pathology at Cornell University.

'05, W. A., '06 W. P.—H. H. Harmon is operating a truck farm at Jamestown, N. Y.

'05, W. A.—W. G. Phillips is running the home farm at East Bloomfield, N. Y., and specializes in potatoes.

'05, W. A.—G. A. Prole is running the home farm at Batavia, N. Y. He delivered an address on "Potato Growing" during Farmers' Week.

'05, W. A.—M. B. Sisson is engaged in general farming at Almond, N. Y.

'06, W. D.—J. H. Kelly, president of the Cornell Dairy Student's Association, attended the agricultural banquet and visited the college during Farmers' Week. Mr. Kelly's address is Lysander, N. Y.

'07, Sp.—Mrs. Carrie H. Ayer, who has been at Hampton Institute, Hampton, Va., has changed her address to Woodside Farm, Angola, N. Y.

'08, M. S. A.—N. H. Grubb is still connected with the Forest Service, Department of the Interior. His address is 1939 Biltmore St., Washington, D. C.

'09, Ph.D.—J. H. Squires, graduate student, is now with the Dupont Powder Co., in charge of investigations of the effect of dynamite explosions on soil.

'09, B. S. A., '11, M. S. A.—Edward H. Thomson is a scientific assistant in the Office of Farm Management, Washington, D. C., and is now at the head of the work in cost accounting.

'09, Sp.—T. M. Scoon visited college during Farmers' Week. He is running a fruit farm at Geneva, N. Y.

'09, W. A.—O. E. Melious is having considerable success in raising apples at his farm at Stanley, N. Y. The farm, which was in rather poor condition when he took it, has greatly improved under his management.

'09, W. A.—R. S. Spencer is manager of a general farm at Malone, N. Y. He states that the course he took here at Cornell has proved of inestimable value to him.

Sp.—R. Van Dorn is running his home farm, a hay farm, at Three Mile Bay, Jefferson Co., N. Y.

'10, Ex.—F. A. Flocken has changed his address to 61 East 50th Street, Chicago, Ill.

'10, W. A., '11 W. H.—H. J. Waterbury called at our office during Farmers' Week. He is on the home farm, a general and fruit farm, at Lyndonville, N. Y.

'11, B. S. A.—Harold N. Kutschbach visited here during Farmers' Week. Mr. Kutschbach is a very successful farmer and is building up a fine herd of pure-bred Holsteins, on the home farm at Sherburne, N. Y.

'11, Sp.—Jay D. Sholes visited here during Farmers' Week. He had charge of the dairy on the Rossiter Realty Co. estate at Shawnee-on-Delaware, Pa., during the past year. On March 1st, Mr. Sholes assumed the management of a dairy farm owned by Perry R. Smith of Ridgway, Pa.

'11, Sp.—Johannes Nielson was a Farmers' Week visitor. Mr. Nielson has, during the past year, been managing a farm near Little Falls, N. Y., for Mr. J. D. Frederiksen.

'11, W. A.—C. V. Allen is managing a dairy farm at St. Johnsville, N. Y. He has thirty-five pure-bred Holsteins on the place.

'11, W. A.—Wm. R. Dewsnop, Jr., has been doing official milk testing work since last October.

'11, W. A.—Lewis E. Lyon is foreman on a fruit and vegetable farm at Hawthorne, Westchester Co., N. Y.

'12, B. S. A.—Alpheus M. Goodman has been doing official milk testing work in the western part of the state. As Mr. Goodman has decided not to return to pursue graduate work this term, he has resigned his position as president of the Senior class.

'12, B. S. A.—Frank A. Pearson is doing cost accounting and farm management survey work with headquarters at the University of Illinois, Urbana, Ill.

'12, B. S. A.—George C. Schempp, who completed his course last term,
was married to Miss Beatrice George of Ithaca, N. Y., in December, 1911. Miss George was a special student here last year. Soon after the wedding, Mr. and Mrs. Schempp left for Albany, Georgia, where Mr. Schempp has a position as manager of a 700 acre pecan and cotton farm.

'12, W. A.—Beuno A. Huber is working on a farm at Yorktown Heights, N. Y., planting orchard. On May 1st, he takes a position on J. G. Beumies' farm at Cortland, N. Y.

H. R. Cates, a graduate student, and A. F. Barss, '12, have been appointed assistants in the Farm Crops laboratory.

* * *

The following are some of the former students who attended the agricultural banquet on Wednesday evening of Farmers' Week:

'73, Sp.—Arthur S. Miller, R. D. 3, Ithaca, N. Y.

'84, B. S. A.—Hon. Chas. F. Boshart, Lowville, N. Y.

'01, B. S. A., '04, Ph.D.—Thomas L. Lyon, Ithaca, N. Y.

'03, W. A.—Royden E. Paul, R. D. 1, Auburn, N. Y.

'04, W. A.—Arthur H. Wakeman, Lawyersville, N. Y.

'06, W. A.—J. E. Black, R. D. 4, Ithaca, N. Y.

'07, W. A.—C. S. Greene, West New Brighton, N. Y.

'09, Sp.—Edgar Salinger, 552 E. 163 St., New York City.

'00, W. D.—Emory Osterhout, Cobleskill, N. Y.

'01, Sp.—Scott Gillett, Homer, N. Y.

'02, Sp.—F. C. Hager, North Collins, N. Y.

'02, W. A.—Malcolm J. Upton, Sandy Creek, N. Y.

'03, B. S. A.—Herbert A. Hopper, Ithaca, N. Y.

'03, Sp.—D. E. Carley, Manlius, N. Y.

'04, Sp.—Sanford R. Clark, 1168 Cortland Ave., Onondaga Valley, N. Y.

'05, Sp.—Henry G. Parsons, 1133 Broadway, New York City.

'07, Sp.—Charles Canby Darlington, Concordville, Pa.

'07, Sp.—LeRoy Munro, Elbridge, N. Y.

'07, W. A.—David C. Kidd, Dansville, N. Y.

'07, W. A., '09, Sp.—Wallace L. Fitts, Moravia, N. Y.

'08, Sp.—Ralph H. Dayton, East Hampton, N. Y.

'08, Sp.—Nellie S. Salton, R. D. 1, De Lancey, N. Y.

'08, Sp.—Thomson M. Scoon, Castle Heights, Geneva, N. Y.

'08, Sp.—Lester J. Wilson, R. D. 1, Castile, N. Y.

'08, W. A.—LeRoy H. Bushnell, Stittsville, N. Y.

'08, W. A.—Wm. S. Westlake, R. D. 2, Horseheads, N. Y.

'08, W. D.—Harry L. Vinal, R. D. 5, Syracuse, N. Y.

'09, W. E.—Miss Grace Fisher, No. Franklin, N. Y.

'09, W. A.—James S. Morse, Leavenna, N. Y.

'09, W. A.—W. LeGrand Williams, New Milford, Pa.

'09, W. H., '10, W. A.—Arthur L. Shepherd, Cazenovia, N. Y.

'09, W. P.—W. E. Hyde, Sidney, N. Y.

'10, Sp.—Wing R. Smith, 37 Wieting Block, Syracuse, N. Y.

'10, Sp.—Irving S. Warner, Riverhead, N. Y.

'10, W. A.—Lawrence L. Davey, Marcellus, N. Y.

'10, W. A.—Howard A. Garrett, R. D. 2, East Syracuse, N. Y.

'10, W. A.—S. W. Place, R. D. 8, Oswego, N. Y.

'10, W. A.—W. B. Remey, Ithaca, N. Y.

'10, W. A.—Carl J. Taber, Edmeston, N. Y.

'10, W. P.—Ford W. Arnold, W. Ononta, N. Y.

'10, W. P.—Arthur S. Chapin, Honeoye Falls, N. Y.

'10, W. P.—Mrs. Mary F. Wheeler, Deposit, N. Y.

'11, B. S. A.—Richard A. Mordoff, Demarest, N. J.

'11, W. A.—W. G. Phillips, East Bloomfield, N. Y.

'11, W. P.—John S. Wright, Barnard, N. Y.
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CHR. HANSEN’S
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Rennet Extract, Cheese Color, Lactic Ferment Culture, Rennet Tablets and Cheese Color Tablets are INDISPENSABLE TO CHEESE MAKERS
Because they are always Uniform, Superior in Strength and Quality and are unexcelled in Reliability.

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The Co-op

Morrill Hall
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THE FARM TRAIN AND VISITORS AT PERU, NEW YORK.
THE AGRICULTURAL SPECIAL AS A TRAVELING EXTENSION SCHOOL

By C. H. Tuck
Professor of Extension Teaching in Cornell University

THE educational farm train idea is not new either in this or other States. A modern College of Agriculture has many ways of reaching the "last person on the land." Bulletins, extension schools, reading-courses, exhibits, cooperative experiments, farmers' weeks, lectures, lecture courses, surveys, visiting and inspecting farms, are among the ways most often used. But occasionally the country needs the physical power of a farm train to awaken the people to ways of self-help. The five educational trains run by the New York State College of Agriculture in the State achieved this result. But the work was nearly all in the form of lectures in the cars during stops of thirty minutes to one hour. It was felt that this was too superficial to be of lasting value. Despite the feeling on the part of many that farm trains had outlived their usefulness, and that they were not adaptable to the much needed contact and direct teaching of extension service, a thoroughly up-to-date train or travelling extension school was equipped to run from April 2d to 12th over the entire line of the D. & H. under the personal supervision of Mr. Ira H. Shoemaker, the Industrial Agent of the Railroad.

The train was extensively advertised by posters, hand bills, press notices, and personal work through agents of the road, masters of granges, school superintendents and principals, postmasters and ministers.

Four passenger coaches stripped of seats were sent to Ithaca where they were equipped with necessary teaching apparatus.

One coach was fitted with an exhibit of insect pests and fungous diseases of the various farm and orchard crops. Specimens of diseased plants and injurious insects besides spraying rods, nozzles of various types and samples of standard insecticides and fungicides used in combatting these pests were on exhibition. Brief lectures were given on the cause and control of fungous and insect troubles. These lectures were illustrated with actual specimens, many of which could be observed through the twelve microscopes on the car. An opportunity for questions and discussions was provided. Specimens of diseased plants and of plants affected by scale and other insect pests concerning which information was desired were brought to the train.

One of the cars of the Farm Train was of special interest to women. It was furnished with an equipment dealing with Domestic Science. Portions of the car were used to illustrate household decoration and furnishing showing the use of fabrics and colors. Some household equipment was on exhibition showing how house-work could be simplified. The principles of food nutrition were taught by means of charts and demonstrations. Visitors found an exhibit of literature on household economics showing the means of taking up the study outside of the schools. Members of the staff of the Home Economics Department accom-
panied by a senior student were present to explain the exhibits.

A third demonstration car contained an exhibit of special interest to poultry-keepers. Devices for the testing of eggs, a killing and picking box, a model of the gasoline colony brooder house recommended by the College, charts showing methods of grading eggs, plans of buildings and photographs were exhibited to illustrate modern methods. In this car a regular laboratory exercise in which visitors actually learned by doing, was tried with great success. Eggs were supplied visitors who actually graded and tested them under personal instruction. Demonstrations of killing poultry always attracted large crowds. The different feeds in proportionate amounts, composing the Cornell poultry rations were exhibited.

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<td>2d</td>
<td>Afton</td>
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<td>3d</td>
<td>Bainbridge</td>
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<td>3d</td>
<td>Oneonta</td>
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<td>1:30 P.M.</td>
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<td>Worcester</td>
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<td>Albany</td>
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<td>Saratoga</td>
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<td>8:30 A.M.</td>
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<td>9:00 A.M.</td>
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It was predicted that three to five thousand people might visit the train and through them as many more would be reached. To the surprise of every one, approximately 20,000 people visited the train, a large part of whom remained for the full day or half day stop as scheduled.

One of the marked features was the fact that eight to ten of the Cornell staff were continuously in close touch with individuals or small groups so that not only were lectures and demonstrations given, but there was time and opportunity for the last question from the last man. The nearness to real things, brought forth real questions. The last hour of the stop was used for personal consultation with experts.

In Cherry Valley, Otsego County, the coming of the train changed a community doubtful as to a new school building and a course in agriculture to one enthusiastic for both. In the Champlain Valley the fruit growers for the first time came together at the train to organize for self help in caring for and marketing fruit.
For arousing interest in the countryside and giving answers to specific questions, this train marks the most effective to date and the beginning of new train or travelling schools that will help much in carrying the necessary teachers and teaching material to the people.

DISCUSSIONS WERE CONTINUED AFTER LEAVING THE TRAIN.

OPPORTUNITIES IN VEGETABLE GROWING

By R. L. Watts
Professor of Horticulture at Pennsylvania State College

DURING the past decade there has been tremendous development in the vegetable growing interests of the United States. The completed census report will show that in many of the states commercial gardening is by far the most important horticultural industry. Southern truck patches have expanded into broad fields. Northern gardens have been increased to large areas. Small ranges of greenhouses devoted to vegetable forcing have been extended to cover acres. Large demands and good prices have encouraged and been directly responsible for this growth.

The present decade, however, will see far greater advancement in vegetable gardening than the past. The agricultural colleges are giving horticulture more attention than ever before. The experiment stations are beginning to appreciate the importance of the vegetable interests and to include them in their experimental projects. Markets are growing and population increasing. Food articles, especially flour and meats are becoming higher in price, thus encouraging the consumption of garden products.

Attention might be called to some special opportunities. There are hundreds of splendid local markets in the United States which are poorly supplied with home grown vegetables. I could name scores of towns which are supplied mainly with vegetables shipped from distant points. Clean, fresh vegetables from nearby gardens are always preferred. Why should a farmer devote all of his land to general farm crops when he might produce for his home market, vegetables which are far more profitable?

Growing vegetables in general farm rotations offers exceptional opportuni-
ties. Heavy clover sods provide ideal conditions for many of the most important vegetables, such as cabbage, tomatoes, sweet corn, peas, beans, cucumbers, peppers, asparagus, sweet potatoes and both classes of melons. This type of vegetable growing is often called farm gardening and it offers splendid possibilities in many sections. If remote from market, cooperative organization will help to market the crop to the best advantage. The growers should unite in the production of a sufficient quantity to attract buyers so that it will be possible to sell everything at the railroad station for spot cash, rather than through city houses on commission.

The muck soils of New York and other states are especially well adapted to celery, onions, and lettuce. These areas are very expensive to clear and reclaim but when properly managed return large profits. Muck farming is an attractive type of gardening and it offers possibilities for expansion.

Vegetable forcing in the United States is just in its infancy. Modern methods of greenhouse construction, heating and management and the increasing demand for the tender, delicious products of these miniature, glass covered farms, make this highly specialized industry peculiarly attractive. The outdoor products of the South have not interfered as seriously with the greenhouse industry of the North as was feared several years ago. Prices for greenhouse vegetables are not as high as ten years ago but the decreased expense of operation and the opportunity for more extensive production have given business a special impetus. Men now speak of greenhouse extension by the acre rather than by the number of square feet of glass. For example, a statement appeared lately in the Market Growers' Journal that Cleveland growers would increase their area of glass this year to the extent of six acres. A Toledo, Ohio, firm recently built a single house, ridge and furrow plan, which covers eleven acres of land. Numerous towns in nearly all of the states would consume more frame and greenhouse products.

Lettuce is by far the most important forcing crop. It is grown and sold at a price which can be paid by nearly all classes of consumers. The tomato is next in importance. Special American varieties of high yielding qualities will be developed, making it possible to sell at lower prices and thus increasing consumption. The cucumber is largely grown in some sections, especially around Boston, but it should be produced much more extensively in the vicinity of other large cities. Radishes, cauliflower, and rhubarb are also excellent crops for greenhouse culture but the demand for them is very small compared with that for lettuce, tomatoes, and cucumbers.

The overhead system of irrigation makes vegetable gardening much more certain. Drouth often curtails yields but with a never failing supply of water which may be distributed almost as evenly and uniformly as rain there is absolute insurance against loss from dry weather. This system of watering has been the means of doubling profits in some market gardens. It enables the grower to intensify his operations, to improve the quality of his vegetables and it relieves him of much worry and anxiety. Irrigation in the East is no longer an experiment. Hundreds of the most successful growers have installed the overhead system of watering in growing vegetables in the open ground as well as under glass.

Profits in vegetable growing have never been better than in recent years. A Cleveland, Ohio, market gardener and vegetable forcer realized a profit of over $10,000 from 12 acres of land. A New Jersey trucker with 75 acres has a net profit of $9 a day, Sundays included, for every day of the year. A Pennsylvania grower, who served several years in an agricultural experiment station says, "There is not a college position in the country that would tempt me." New York has a great number of men who are making handsome incomes growing vegetables. Norfolk and Chicago boast of their millionaire gardeners.
**CROP PRODUCTION IN NEW YORK STATE**

*By E. G. Montgomery*

Professor of Farm Crops at Cornell University

People living west of the Mississippi River hear very little about the crops produced in New York State, although they hear a great deal about the apples and grapes produced here. The impression gained from this among western people is that New York State is not a very large crop-producing state, especially when at the same time tales are also heard about the number of abandoned farms within her borders.

However, New York is a great crop-producing state and has probably as great potential possibilities for future development as any of the Western States.

The hay crop is the most valuable single crop, being valued at about $55,000,000, but the total cereal crops are valued at $34,000,000. The total value of all crops produced in the State are estimated at $110,000,000. This total value has been increased to $143,000,000 during the last ten years, due mostly to the increase in prices.

Already there is a movement of farmers from the central west, principally from Ohio and Indiana, toward New York State where lands of equal crop-producing power are much cheaper than in that region. It is said that in some counties as many as forty or fifty families have moved in during the past year.

If it were generally known throughout the grain-growing states that New York had great possibilities as a crop-producing state, it is probable that a fair share of the vast stream of money that is now being poured out from the

The following table, taken from the Census of 1899, shows the comparative value of the principal agricultural crops raised in New York State:

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<th>Crop</th>
<th>Value</th>
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<td>Hay and Forage</td>
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<td>Cereals:</td>
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<td>Oats</td>
<td>12,929,092</td>
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<td>Corn</td>
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<td>Wheat</td>
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</tr>
<tr>
<td>Orchard Crops</td>
<td>10,542,272</td>
</tr>
<tr>
<td>Grapes</td>
<td>2,763,711</td>
</tr>
</tbody>
</table>

For fifty years New York has ranked first or second in buckwheat production.
corn belt states for land in Canada and the Northwest would be turned in this direction. These farmers are all grain and general-crop farmers and while they are interested in fruit growing as a garden crop, they are not necessarily looking for fruit farms, but for crop farms, and this is the reason why they are going into the Northwest and paying from $30 to $40 an acre for land which grows principally wheat, flax, and hay, and that with very uncertain climatic conditions. How much better is a crop-producing farm in New York state, where not only crops can be produced but, in addition, fruits of all kinds raised near at hand, and in addition to that a well-developed market, good schools, and desirable social conditions? Probably the best opportunity for buying land that will pay a fair return on the investment as well as to furnish a desirable place of residence, is to be found in the Eastern States and particularly on the better lands of New York State.

The land values in New York State have shown a rapid appreciation in the last ten years, and it is evident that prices here must further advance or else prices in the West must come down, as there is too great a difference in prices when productivity of the land and the market or products are considered. It is not likely that the Western farmers will readily agree to take less for their land than the present price, which they consider fixed at least. It, therefore, seems very probable that New York State land must make a rapid advance in the next ten years.

I have been making a rather careful study of land values, both east and west, for the past four years and am convinced that a young man can start easier in buying a farm and paying for it in New York State than in any of the western states with their very high-priced land and local markets not as good as they are here. New York State has not begun to develop her own possibilities in crop-producing lines. The hay crop averages about 1.2 tons per acre; corn and oats, 30 bushels and 31 bushels respectively per acre. It is not more than one-half what is being secured by the best farmers in the State. If all the farmers as a class could be induced to do as good farming as the best farmers in each community, we could easily double the annual crop production of the state.

New York agriculture has suffered because her best young men have been for two or three generations going into the newly opened-up country of the West, or been attracted by the high

![A good crop of corn can be grown in New York State.](courtesy of the farm management dept.)
prices paid in industrial lines. The agricultural opportunities have now changed in the West since all free land is taken up and the price is very high, and as to opportunities in industrial lines, they do not offer the advantages they did a generation ago when wages were high and agricultural products were low. Let us all turn our attention to developing New York State agriculture. The opportunity is great: our own resources are not half developed and there is no better outlook for a young man interested in farming than to take part in the great development which is sure to come in the next generation.

TREE PRESERVATION

By G. W. Hendry, '14
Michigan Agricultural College, '09

The interest which has everywhere been awakened during recent years in behalf of our shade trees, has generated a new set of professional men, practicing a new profession, tree surgery. Examples of their work may be seen in any large park. They fill cavities, amputate limbs, brace weakened and strained joints and do other useful work for the trees.

In reviewing the progress made in this new field, it is interesting to note that some very substantial strides have already been made. On the other hand as is to be expected, no definite standard has yet been established and some of the work is quite indifferent, indeed in many cases the treatment accorded a tree is anything but beneficial. Tree doctors disagree as is shown by a most astonishing lack of uniformity in their methods of procedure and technique. This lack of thoroughness and scientific accuracy has been detrimental to a healthy upbuilding of this new profession, namely the science and art of tree pathology.

These considerations have led me to think that some few simple statements based upon established principles may lead to a better popular understanding of this important work.

Primarily any treatment of a diseased tree which does not acknowledge the organic nature of both the tree and the parasite, or which fails to comprehend the functions, interdependence and vital nature of the tissues concerned, is more apt to result in harm than in good.

Well directed, effective work demands a right understanding of the essential principles immediately involved. It also demands a most intimate acquaintance with the several other branches of science not intimately concerned. Superficial knowledge and inadequate experience can only lead to erroneous procedure. Now what we actually know about tree disease is surprisingly meagre. It is true we may know all about the systematic position and morphology of the disease producing parasites and at the same time know little of the true nature of the diseases they induce. The disease may be described as the abnormal physiological conditions of the tissues and may be studied only through patiently and carefully conducted infection experiments. Furthermore, innumerable circumstances combine to modify the work of the fungus, and its work is hastened or retarded by innumerable agencies. Again, anomalous symptoms resulting from unfavorable environment appear, frequently so closely resembling a diseased condition as to be most confusing.

Thus it will be seen that in our present knowledge we can not diagnose or prescribe with anything like accuracy.

Fortunately we have the most exact knowledge of the anatomy of trees and
a long series of painstaking investigations in plant physiology have given us a clear insight into the life processes of plants. Plant pathology, however, which deals with the abnormal conditions of plant tissues is a much more recent science and has not yet been developed with anything like the minutiae of plant physiology.

Both science and experience have revealed certain basic therapeutic principles which give us the key to an intelligent treatment of diseased trees. Among these perhaps the most primal is a knowledge that certain conditions are prerequisite to the existence within the host plant, of the disease producing organisms, and if any or all of these conditions are eliminated, the organisms must perish and decay cease. For example, a fungus requires air, moisture, and organic food. So to seal a cavity air and water tight must result in practically making it immune from further destruction.

This forms the nucleus about which practically all dendropathological treatments are centered and must be well understood and kept constantly in mind.

What actually causes a living tree to decay and become hollow? It does not just rot of its own accord; it is attacked by a low form of parasitic plant called a fungus. Occasionally a fungus is associated with bacteria with interaction and chemical decomposition, and in nearly every instance the larvae of wood-boring insects follow, completing the work of destruction.

Fungi propagate chiefly by spores, which are minute single cells, analogous to the seeds of the higher plants and are produced by countless billions. They are so small that a single house-fly may carry a sufficient number lodged in his feet to infect every tree in a small grove. In the first instance these fungus spores gain access to the tree through a wound in the bark, a broken limb, a frost crack, sun-seal, or any injury which exposes the wood beneath the protective covering of bark. This explains the philosophy of painting wounds when pruning. Having gained access to the tree the spore germinates, developing into a filamentous ramifying fungus body. It grows and develops at the expense of the wood tissues with which it comes in contact, deriving its nourishment from the wood cells by piercing them with minute processes which destroy their structure and leave behind a decomposed wood residue and cavity.

The first work of the tree doctor is to cut out every part of the diseased wood, then cleanse and disinfect thoroughly with a strong fungicide. The cavity should then be coated with a thick application of creosote which, penetrating the wood cells, coats over the albuminous matter upon which the fungi subsist and protects the cells from further injury. The cavity should be completely and solidly filled, and above all, should be sealed as nearly water tight as possible.

Lying just beneath the bark is a peripheral layer of tissue called the cambium. All growth has its origin in the division of the cambium cells, i.e., increase in diameter and all healing tissues are merely outgrowths of the cambium. Since the cambium is all in the outer part of the trunk, just beneath the bark, no internal cavities are healed and there is no internal growth in the tree trunk.

The cambium is a comparatively thin layer of tissue being about the thickness of an ordinary pen line. It is composed of minute thin-walled cells which are entirely incapable of growing over the jagged fracture of a broken limb, or the rough surface of a concrete filling. Hence, in good pruning, limbs are cut off flush with the trunk and are cut smooth and even. A concrete filling should be smooth along the edges where it meets the tree and should articulate accurately with the cambium layer, otherwise, it makes the healing over process a slow one.
THE FARMER AS A BUSINESS MAN

By F. E. Rogers, Sp.

[This speech was awarded second prize in the Third Annual Eastman Stage held February 23d, 1912.]

FARM accounting is a subject with which all of us are more or less familiar, but how many of us actually practice it? Professor Warren in his farm survey work in Tompkins, Jefferson and Livingston Counties finds that only two farmers in every hundred keep an accurate record of their business. These figures are indicative of conditions one hundred years ago. At that time farmers were engrossed mainly with problems of production. The farm must supply all the wants of the family directly. Today other problems are in the foreground; often few of the needs of the farmer’s family are satisfied directly from the farm, they are supplied by exchange. The great questions which confront us today are those of buying and selling, which crops possess the greatest exchange value, and how our business fares from year to year. The farmer is first of all a business man and he must employ business methods if he is to keep in the van during these days of keen competition. He cannot plan wisely and well for the future until he knows exactly where he stands at the end of each year.

In the first place, a farmer should know how his investment as a whole is paying. If he finds that the farm is a loosing proposition and that profits do not appear after a change in management and a reasonable lapse of time, then perhaps the farm is at fault, or maybe the man himself is not cut out for a farmer. At any rate, the sooner the proprietor knows the true state of affairs, the better.

Not only should the farmer know his net income, he should also be able to tell which of his crops and animals are paying a profit and which are kept at a loss. He should know exactly what each enterprise contributes or deducts from his income. With this knowledge in his possession he has the keys to the whole situation; he is now in a position to drop the unprofitable crops from his rotation; or, if this is undesirable he can change his methods of management to secure better results, at the same time giving his first and best attention to the most profitable ventures. How is a farmer to secure this information to distinguish the profitable from the unprofitable crops? One can tell very little about the profits of a season by the amount of cash on hand at the end of a year. In the same way, appearances, opinions, or specific instances are unreliable in determining the best paying ventures. The desired information can be secured in no way so easily and accurately as by a simple system of farm accounting. Rightly used, the account books are profit indicators, if you please, of the crops to which they are applied.

Mr. L. A. Toan, of Western New York, wishing to grow the tilled crop in his young orchard, which would return the greatest profit, kept an account with each crop during the year. At the end of the year, he found the net income for potatoes was $37.00, for beans $30.00, and for corn $3.65. Now if accounts kept with these crops in later years verified these results, it is pretty certain that corn was dropped from the cropping scheme of that orchard.

Someone asked B. J. Case why he was a fruit-grower. Mr. Case answered: “Because the ledger made me one,” meaning that he became a specialist in fruit because he found from his account books that he derived the greater profit from this source. In other words, accounting enables one to follow up success, and after all that is the secret of every prosperous career. How many of the failures in farming are due to the fact that farmers don’t really know which of their branches is a success financially, or rather which is the greatest success. Being ignorant of these facts, they simply go on the wrong track. If one had known that
he made money on sheep or horses; another that he was better adapted to fruit-growing, successful careers would be more frequent. Expressing it in other words, the ledger when rightly interpreted is a mighty force in adjusting round pegs to round holes and square pegs to square holes.

One of the most successful fruit-growers of the state told me recently that he was tearing out his vineyard at the rate of four acres per year and planting the same land to peaches; not because the grapes did not pay, but because the account books showed that a greater profit was derived from peaches. This illustrates what A. C. King of Trumansburg means when he says that from one-half to three-fourths of the problems which a fruit-grower must solve are purely business in nature, and that account books give the only reliable results by which to guide or dictate the business policy.

We should adopt this practice for the purpose of spurring us on to better work. Along this line, we have the testimony of Mr. King, who says that one is constantly alert to cut expenses and to increase his profits after his books show him what he is really making. Does it not stand to reason that one-third of the farmers in Tompkins County, who earn less than hired men's wages, would be stimulated to greater efforts if they saw from their books how little they were making? If farmers actually knew how much it cost to grow an orchard until it began to bear, would they take better care of so expensive a venture, with the result that there would be fewer neglected orchards through the country? The ledger presents the bare facts. It tells in plain language the degree of our success. The message is often of such a character that we strive hard to secure a more favorable record in the future.

Now, one may rightly ask, if farm accounting possesses such merits, why has it not been more generally adopted by the farmers? When you ask a farmer why he does not keep accounts, he will say that the system is too complicated and requires too much time for the practical man. These objections can be best overcome by putting forth a simple method of doing this work. Let the farmer take an inventory of all his possessions once each year to determine what he is actually worth. Then by comparing the amount of inventory taken January, 1911, with the one taken January, 1912, he can tell whether he is worth more or less at the end of the year, or in other words whether or not the year has been a successful one. In the next place, he should keep an account with the more important crops. Note down all the expenses of production and deduct them from the proceeds. This is all any farmer needs to do, in order to know how the farm is paying and from which crops he gets the greatest profits. Of the complexity of this method I will leave you to judge. Any school boy who is proficient in arithmetic could perform all the operations involved. A fruit-grower who has a farm of one hundred and forty acres, ninety acres of which are in fruit told me that it took him only ten minutes a day and only three or four days at the end of each year to keep such accounts. Certainly this outlay of time is amply justified by the results.

Recognizing as we do the value of business ability on the farm, is this subject of farm accounting not worthy of a trial? Can we, who are masters in the production of good fruit, consistently omit the most up-to-date business methods from our scheme of management? As well might we attempt to sail without a rudder. Today the most intelligent direction of our business policy is possible only through the use of farm accounts. They have a message for the man on the farm which can be secured through no other channel. They answer the all important questions: What am I good for, and what branch or branches of agriculture will give me the greatest profits? To most of us, such an answer is the assurance of success.
MICHIGAN'S STATE REWARD ROAD LAW

By Frank F. Rogers
Deputy State Highway Commissioner, Lansing, Mich.

MICHIGAN'S state reward road law is unique. No other state has tried anything like it and many people are still looking upon it as an experiment, doubting whether it will really result in a large mileage of well built continuous roads. Its promoters are more than satisfied with the results thus far obtained.

The state reward is a fixed amount per mile paid to the township or county building a road, based on minimum requirements. The amount varies with the class of road that is built.

<table>
<thead>
<tr>
<th>Class</th>
<th>Per mile</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A, sand-clay, or its equivalent</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Class B, gravel draws</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Class C, stone bottom-gravel top draws</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Class D, gravel bottom-stone top draws</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Class E, macadam</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Class F, concrete</td>
<td>1,000</td>
<td></td>
</tr>
</tbody>
</table>

The least width of turnpike or road grade allowed is 20 feet. The least width of metal track allowed is 9 feet, making a single track road. Greater widths of roadway and metal track are recommended by the State Highway Commissioner for the more heavily traveled roads but they cannot draw any greater rewards.

The Michigan State Highway Department was organized July 1st, 1905, since which time about 1,150 miles of road have been constructed. The steady growth will be seen from the following:

<table>
<thead>
<tr>
<th>Roads built</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905 (6 months)</td>
<td>20</td>
</tr>
<tr>
<td>1906</td>
<td>40</td>
</tr>
<tr>
<td>1907</td>
<td>80</td>
</tr>
<tr>
<td>1908</td>
<td>160</td>
</tr>
<tr>
<td>1909</td>
<td>214</td>
</tr>
<tr>
<td>1910</td>
<td>276</td>
</tr>
<tr>
<td>1911</td>
<td>360</td>
</tr>
</tbody>
</table>
The roads are divided among the different classes roughly, as follows: 70% gravel, 25% macadam, the remaining 5% covering all other classes.

The roads are built by both townships and counties. The local officials employ an engineer, who makes the survey and prepares a plan which is sent to the State Highway Commissioner for approval, together with an application for the amount of reward the class of road to be built is entitled
to draw. On approval of the plans by the state, full directions are sent to the commissioner for building his road. If, for any reason, the directions are not understood, or the material to be used is questionable, an engineer-inspector is sent to fully explain the State’s requirements.

When completed, the road is again inspected and, if found to comply with the directions given, it is accepted and the state reward paid.

AGRICULTURE IN HAWAII

By Vaughan MacCaughey, ’08
Assistant Professor of Botany and Horticulture in the College of Hawaii

THE territory of Hawaii consists of an archipelago two thousand miles long, in the North Pacific Ocean. It is 2,100 miles west of San Francisco and 4,700 miles east of Manila. These islands were discovered by Captain Cook in 1778. The land surface of the eight inhabited islands aggregates about 6,500 square miles, being a little less than the State of New Jersey. The largest island, Hawaii, has an area about the same as Connecticut.

To the northwest of the larger island lies a series of tiny coral atolls and barren rocks, scarcely rising above the surface of the sea. These have a combined area of less than six square miles, and are of no agricultural significance, save as sources of guano.

This chain of islands is of recent volcanic origin. Volcanic activity has evidently moved southeastward along well-defined fissures. The smaller, most deeply eroded islands, having fewest traces of recent volcanic action, are to the northwest, while to the southeast they are larger, less eroded, with fresh lava flows and other indications of late eruptions. Indeed, on Hawaii itself, the largest and most southerly of the islands, are the two great active volcanoes, Kilauea and Mauna Loa. On this island lava flows and other volcanic phenomena occur at relatively frequent intervals.

The soils of Hawaii are composed almost wholly of disintegrated lava rock, and are of recent geologic origin. In the valleys and wooded regions there is a small amount of humus; along certain shores there are lowland plains of coral origin; but aside from these there is no other soil but that derived from lava. In many places one can observe with striking clearness the various stages in the decay of the original lava-flows. As a rule the soils are very deep, this resulting from either decomposition in situ, or long-continued washing from higher levels.

Hawaiian soils respond quickly to the application of fertilizers, and like all other new soils improve rapidly under rational cultivation. Many of the soils are deficient in lime, but this is easily supplied in the form of coral sand, an excellent form for soil improvement. Dr. Wilcox, special agent in the Federal Experiment Station in Honolulu, says: “When plowed deeply our soils are exceedingly retentive of moisture, as evidenced by the fact that cotton and various other plants thrive in a wild condition where no rain falls except once or twice per year, and then only to the extent of one or two inches. Moreover, good crops of alfalfa and forty bushels of corn per acre have been produced with two inches of rainfall without irrigation. One of the most important points in soil cultivation, which has been demonstrated by the sugar planters, is the great value of deep plowing. Some of our soils are commonly plowed to a depth of two or three feet, and are thus put in condition to hold and store the rainfall, for the benefit of the crop. The soils are easily kept in good tilth and great fertility by deep plowing, suitable crop rotation, and the application of fertilizers to replace special elements of plant-food removed by the crops.”
The Hawaiian Islands are just within the tropics and the climate, in general, is distinctly sub-tropical. Cool trade-winds and ocean currents reduce the temperature about ten degrees below that of any other part of the world in the same latitude. The prevailing wind is the Northwest Trade, which blows on an average 260 days in the year.

In general there are no sudden changes of temperature, and very slight and gradual seasonal changes. The climate is a warm, bright monotonous, without frost, "northers," thunderstorms, hurricanes, or cyclones. The contrast is striking between this equable condition and the bizarre vagaries of the eastern states' weather. At ordinary elevations the inhabitants of the territory live practically in the open air the year round, since it is almost never necessary to close windows or seek protection against the weather, except for occasional showers.

Considering the small area of the territory the variation in rainfall is remarkable. Each island has a windward, cooler, rainy side, where the annual rainfall may amount to 250 inches or over; and a leeward, warmer, arid side, where the annual rainfall may not exceed two or three inches. These figures indicate the extremes, however, and frequent light, local showers are typical of the Hawaiian climate. The average relative humidity is 72%, which is low for the tropics.

The four million acres that comprise the land area of Hawaii are of the following types, waste land 32%; forest land 25%; grazing land 33%; arable land 6%; reclaimable land 4%. Altitude and exposure to the winds are the chief factors in the productivity of the agricultural lands. Of the arable land the most valuable is that now utilized by the sugar plantations. This aggregates about 213,000 acres, on the alluvial flats and lower slopes. Above or adjacent to these areas is a belt, aggregating 1,500,000 acres, too high or too dry for sugar-cane, and so used for grazing. Higher up on the mountain slopes, in many places extending well up towards the summits are the forests, which constitute invaluable water-reserves for the lower lands. The profound importance of this forest-cover is generally recognized, and nearly all of the forest land is now in territorial or private reservations.

The lands of Hawaii are owned as follows: public lands, 46%; corporately owned, (chiefly sugar plantations), 39%; individual Americans, 10%; individual Hawaiians and part-Hawaiians, 9%; individual Asiatics, 2%. The land was owned, of course, at one time, entirely by the Hawaiian people, who were preeminently farmers and who developed a highly intensive system of cultivation. Arable land and available water was utilized to a maximum degree. The food supply of the early Hawaiians came almost wholly from the fertile lowlands that engirdle the islands, and from the bounteous ocean. Taro, cocoanuts, bread-fruit, bananas, sweet potatoes, and a few wild fruits of minor importance constituted their vegetable food. Fish, fowl, swine, and dog supplied the remainder of their diet. The pounded corn of the taro, forming a starchy and acetic paste called "poi," was their "staff-of-life," and "fish and poi" is still a by-word for a meal.

The limited area of the islands restricted nomadism; the entire lack of big game cut off hunting; and the absence of grazing domestic animals prevented pastoral life. Thus this peaceful, kindly people, became by, force of circumstance, skillful farmers. Their ancient practices are unfortunately decadent, and little survives but deserted taro-patches, neglected groves of bananas, and slow-dying coconut plantations, to tell of the minute system that once drew tribute from every foot of good land, and was so marvellously adapted to local conditions.

During the middle of the last century there were about 11,000 native landowners, each occupying and tilling "kuleanas" of from two to three acres in extent. "This division of the land illustrates the fact that the needs of
the common people were filled and a relatively high state of culture developed by individual work on very small tracts; in fact, the native under best conditions can rarely make use of a larger area.''

The agricultural industries of Hawaii may be classed as follows:

I. **Field crops.** Sugar cane; rice; sisal; cotton; coffee; rubber; tobacco; vanilla; corn; cassava; castor-bean; alfalfa; sorghum; Para grass; pigeon pea; Jack bean; bamboo; matting plants.

II. **Vegetables.** All the usual vegetables of the temperate zone, most of them being in the market continuously throughout the year; many Asiatic vegetables.

III. **Commercial fruits.** Pineapple; banana; papaya; mango; orange; lemon; lime, pomelo; grape; roselle; avocado; coconut; guava; bread-fruit.

IV. **Flowers and ornamentals.** Great variety of tropic and temperate-zone species; many commercial gardens near Honolulu.

V. **Live Stock.** Dairying; beef-cattle; sheep and goats; swine; horses and mules; poultry; pigeons; honey-bees.

With reference to Hawaiian crops, Jared G. Smith, formerly Special Agent in Charge of the Federal Experiment Station, writes: "Tropical agriculture differs from that of the temperate zone in one important particular, which is that most of the tropical crops are perennials and that most tropical products require manufacture before being salable. Tobacco is not salable until it has been fermented; sugar must be extracted from the cane by expensive and intricate milling processes; vanilla, coffee, sisal, and almost every other paying crop requires a larger investment of capital than would be necessary for an equal acreage of any temperate zone crop, because of the manipulation required to transform the raw material into a finished marketable article. Furthermore, the time limit adds to the necessity for larger investment, in that most tropical crops cannot be harvested in a short season. One must wait three years for vanilla, two or three years for sugar, two years for pineapples, and four or five for coffee, rubber, and sisal."

The status of the various branches of agriculture in Hawaii is indicated by the following table of the chief agricultural exports and imports for the year ending June, 1910:
Product | Exported Value | To | Imported Value | From |
--- | --- | --- | --- | --- |
Agric. implements | $1,530 | U.S. | $190,502 | U.S. |
Animals | 4,558 | | 40 | |
Bread-stuffs | 288,507 | Japan | 1,904,793 | U.S. |
Cocoa and chocolate | 13,718 | | 39,622 | |
Coffee, raw | 18,553 | | 19,271 | |
Coffee, raw and mfrd. | 11,790 | Japan | 1,766,393 | U.S. |
Cotton wares | 1,257 | | 98,519 | |
Eggs | 11,775,050 | | 249,861 | U.S. |
Fibers and textiles, raw. | 70,105 | | 191,118 | |
Fish | | | | |
Fruits and nuts | | | | |
Hay | 50,412 ('09) | | 227,795 | |
Hides and skins | 7,938 | | 13,988 | |
Honey | | | | |
India-rubber, mfrd. | 139,105 | | 79,143 | U.S. |
Malt | | | | |
Meat, etc. | | | | |
Beef products | 5,276 | | 374,642 | U.S. |
Hog and other meat products | 11,021 | | 493,833 | |
Dairy products | | | | |
Leather | 2,190 | | 467,525 | |
Nursery stock | 2,600 | | 2,190 | |
Rice | 709,673 | Japan | 116,605 | U.S. |
Rice and flour | | | | |
Sauce (soy) | 9,784 | | 765,038 | U.S. |
Seeds | | | | |
Spirits, liquor, etc | 3,078 | | 137,667 | |
Saki and wines. | | | | |
Starch | 6,798 | | 15,712 | U.S. |
Straw and palm-leaf mfrd. | 35,487,912 | | 30,994 | |
Sugar, molasses, syrup | | | | |
Sugar, refined | 2,144,830 | | 40,658 | |
Tea | | | | |
Tobacco | 15,698 | Foreign | 18,702 | |
Vegetables | 659,661 | | 233,506 | |
Wood and manufacturers | 129,111 | Japan | 1,418,628 | U.S. |
Wool and manufacturers | | | | |

There are numerous institutions in the territory whose work, in whole or part, is of a distinctly agricultural nature. The College of Hawaii, which is a college of agriculture and mechanic arts, corresponds to the state universities of the mainland. This college was established in 1907, and now has a faculty of eighteen; 135 enrolled students; a farm of ninety acres; five buildings; well equipped laboratories; a library of 8,000 volumes; and an annual income at present of about $60,000. The college has held several short courses; conducted movable schools in the other islands; organized correspondence courses; and thru its Extension Department has fostered the diffusion of agricultural information throughout the territory.

Considering its limited area, Hawaii is an unusually rich agricultural country. Its farm problems have been solved on a corporate, rather than an individual basis. The land is worked by employees, not by independent farmers. The Oriental does the manual labor; the white man is a supervisor. There is a conspicuous absence of "country life," as that term is used on the mainland. In spite of the unique difficulties of its problems, the outlook for the future of Hawaii's agriculture is indeed bright. The materials are here for a splendid development of farm lands and farm
institutions. Her past record of agricultural achievement has been one of remarkable successes; Hawaii's future will be a continuance of progress upward, and into higher fields.

(Note—In the preparation of the above article the following excellent sources were freely drawn upon—Agriculture in Hawaii, Smith; Hawaii, Its Agricultural Possibilities, Wilcox; Hawaii, Its Natural Resources, Newell.)

STATISTICS OF THE 1912 WINTER COURSE STUDENTS

The Secretary of the College has compiled some statistics concerning the Short-Course Students which are of interest. A similar record of all students who matriculated in October was published in the March number of The Cornell Countryman.

These figures show that the Short-Course instruction reaches, mainly, residents of New York State and that a large number of the students come from the rural districts. Most of them had attended at least a high school and over eighty per cent. of them have had practical farm experience. Another noteworthy fact is that over eighty per cent. were desirous of securing positions. The statistics follow:

WINTER COURSE STUDENTS, 1912

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of men</th>
<th>Dairy Industry</th>
<th>Horticulture</th>
<th>Poultry Husbandry</th>
<th>Home Economics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of men</td>
<td>191</td>
<td>91</td>
<td>56</td>
<td>48</td>
<td></td>
<td>386</td>
</tr>
<tr>
<td>&quot; &quot; women</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>9</td>
<td>32</td>
<td>56</td>
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(Continued on page 272)
The Cornell Countryman

ALBERT H. WHITE, Editor
EDWIN P. SMITH - - - Alumni Notes Editor
H. ERROL COPPIN - - - Artistic Editor
ORRIN M. SMITH
JESSE S. BROWN - - - Associate Editors
DUDLEY ALLEMAN
GEORGE M. BUTLER - - Business Manager
BRUCE P. JONES - - Assistant Managers
HERBERT A. THOMPSON

May, 1912

According to the custom of the COUNTRYMAN the present board as a unit severs its connections with the paper with this issue that the new board may start with the June issue to direct the destinies of the paper through another year.

It is hard to describe the mingled feelings of pleasure and regret which are felt at this time; pleasure because we feel that the new board is well capable of shoultering the responsibilities, regret because in reviewing the past we see the undeveloped plans, the lost opportunities and the errors, and would endeavor to make use of the experience which the years' work has taught us, by trying to improve the paper another year.

It has been our policy to endeavor to reflect as far as possible the ideas and sentiments of the students of this College, to give them the news of their College, and in all cases to stand for and uphold the best interests and ideals for which the College stands.

We wish to take this opportunity to thank the students and others who have helped us in carrying out our policies and hope that the undergraduates of this College will continue to feel that the COUNTRYMAN is in every sense, of them, by them, and for them, and that they will continue to make it so both by verbal and written communications embodying their ideas and suggestions. It is our hope that the COUNTRYMAN may some day have a building of its own where it can serve the students to the fullest extent and to the best advantage.

In all sincerity do we congratulate the undergraduates of the College on the board elected to office for 1912-13, and our best wishes go with them as they take up their duties. The board as elected for 1912-13 is: Editor-in-chief, Orrin M. Smith, '13; Alumni Notes Editor, Jesse S. Brown, '13; Artistic Editor, H. Errol Coffin, '13; Associate Editors, Dudley Alleman, '14; Hadley C. Stephenson, '14, Frank W. Lathrop, '14; Business Manager, Bruce P. Jones, '13; Assistant Managers, George R. Attride, '14, J. J. Swift, '14, and A. S. Walker, '15.

We wish to express our sincere thanks to the following men for work done this year: H. F. Wortham, '14; A. M. Grimes, '15; T. G. Stitts, '15; E. C. Heinsohn, '15; H. M. Stanley, '15 and A. Montague, '15.

A Review

The college year, 1911-12, has been an eventful one in the College of Agriculture and as it draws to a close it is interesting to pause for a few moments and reflect on it.

The year opened in October with a very unsettled condition of the admin-
istrative situation, and the College may well congratulate itself that this situation is now in a much more satisfactory form. It was recommended by the Dean that, briefly, all state work at Cornell should comprise one administrative unit. In following out this suggestion a plan was worked out, which resulted in the creation of an Agricultural College Council of eleven members and with certain specific powers, whereby the running of the College has been placed on a much more efficient basis.

As a result of the extensive building operations which have been carried on throughout the year, three large buildings have been added to the Agricultural Campus, and will be ready for occupancy next fall. These buildings are the Home Economics Building, the Poultry Husbandry Building, and the Horse Barn. Work on the new Auditorium is now well under way also.

The re-establishment of the Department of Forestry last fall was hailed with delight and may be counted as one of the really big events of the year. Nothing will be left undone to make the new Department the best in the country.

The dissemination of knowledge throughout the state by means of Farm Trains and Extension Schools may be counted as a very important part of the work of the College this year. This work is vital for it takes the work directly to the farmers themselves which is one of the first duties of the college.

Another means of bringing the College in direct contact with the farmers themselves is thru Farmers' Week, and this year witnessed the most successful Farmers' Week which has ever been held, not only in the number of visitors which greatly exceeded that of former years, but in the increased number of lectures, demonstrations, conferences, etc., and in the growing interest shown in all these things. The programme was so arranged that a visitor could follow a regular course for the week along any certain line.

The Students' Association has been very active this year, and two phases of their work deserve special mention. The first is the effort to organize the former students of the College into county branches or chapters in such a way that Cornell men in a given section will be mutually helpful and that they may, by thus organizing afford a means for the College to deal directly with a considerable number of former students. It is hoped that the seniors who go out this year will do their utmost to further this work in order to promote the mutual advancement of their community and the College. The second phase of their work consisted of the adopting of a set of resolutions at their annual meeting in Farmers' Week, which were aimed to show the support and appreciation which the students and alumni of the College would give to Dean Bailey in his efforts directed toward the betterment of country life and in his work of reorganization of the College of Agriculture.

The commendable change in the manner of elections of the Agricultural Association to a polled vote in order to secure a more representative vote is worthy of mention at this time.

From this brief summary then, it can be seen that the year has been as successful as it has been eventful. With a new start due to the reorganization; with the increased facilities offered by the new buildings, and with the many other advantages
already enumerated prospects for next year and for many years to follow look bright indeed.

We are very glad to learn that Professor Craig, who has been obliged to give up his university work for some time on account of illness, is steadily regaining his health and will be able to resume his duties in the near future. Mrs. Craig, who has also been ill, is now we are pleased to announce, on the road to recovery.

STATISTICS OF THE 1912 WINTER COURSE STUDENTS

(Continued from page 269)

<table>
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<th>WINTER COURSE STUDENTS, 1912—Continued</th>
<th>General Agriculture</th>
<th>Dairy Industry</th>
<th>Horticulture</th>
<th>Posology</th>
<th>Husbandry</th>
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## CAMPUS NOTES

### CALENDAR

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<td>Thurs., May 2</td>
<td>Monthly Assembly.</td>
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<td>Fri., May 3</td>
<td>Intercollege Baseball, Ag. vs. Architecture.</td>
</tr>
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<td>Fri., May 10</td>
<td>Intercollege Baseball, Ag. vs. C. E.</td>
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<tr>
<td>Wed., May 15</td>
<td>Intercollege Baseball, Ag. vs. M. E.</td>
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<td>Mon., May 20</td>
<td>Ag. Soph. Class Meeting—Election of Officers.</td>
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<td>Lazy Club Meeting. Round-Up Club Meeting.</td>
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<td>Tues., May 21</td>
<td>Ag. Assoc. Meeting.</td>
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<tr>
<td>Sat., June 1</td>
<td>Intercollege Regatta</td>
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The April Assembly as usual was well attended. The program consisted of selections by the Girls' Glee Club and the Men's Glee Club. Dean Bailey was introduced by Acting President Whitney of the Agricultural Association. He first welcomed the Faculty of the Veterinary College who were the guests of the evening and made an announcement concerning the Summer School of Agriculture. Concerning the proposed change from a B.S.A. degree to a B.S. degree he stated as reasons: first, that a technical degree is not applicable since this college is not strictly a professional school, second, that the agricultural course is a science course; third, that the B.S.A. degree does not fit the home economics, the forestry or the rural arts courses; fourth, that we cannot dignify a profession by calling it names, fifth, that the B.S.A. degree does not make one eligible to certain teaching positions in New York State. He then continued in part as follows: “I have often spoken of man's responsibility to the state and tonight I wish to take an opposite point of view, the responsibility of a state to its citizens. A bill has recently been passed remitting taxes on forest lands which are not productive. This bill encourages the planting of forests on land which is suitable for nothing else. The state is beginning to see its responsibility for the betterment of rural conditions. Another good sign is the bill passed to enable county boards of supervisors to raise money for the improvement of the county especially referring to its agriculture. Society is responsible for the keeping of the earth's surface. “One phase of this responsibility concerns parks. According to the old idea, parks are a condescension to the people. The chief purpose of these parks is to remove blemishes. As a blemish I prefer the old fashioned tin can to the modern advertising billboard. I believe that no private
enterprise has a right to advertise its business in a public place. In so far as the parks are to remove blemishes they are negative; the positive results are incidental. The modern idea is that large reservations shall be set aside so that all the people may enjoy them.

"The economic vigor of a people depends on what they produce from the soil. It is essential that we should not forget to keep in touch with the soil. We are getting too high above the earth. Antæus was invincible only when his feet were on the ground. Civilization cannot be carried in a flying machine. I question whether the development of the cities indicates permanent civilization. Is it not rather the civilization of the Roman Empire which the Vandals and the Goths destroyed because they were the stronger? It is more important that we remember to keep in touch with nature than that we revise the tariff or carry on other political reforms. The tangible must come before the intangible, fact must come before theory. If it were practical I would have every student work productively for one year before coming to college. I do not care where he works as long as he learns to articulate his college atmosphere with real life. The educated man is now the antithesis of the working man because we have not learned to organize labor educationally. It is the duty of the state to promote the features which will preserve its background.

"At first the state was only a means of protection. Then its chief function became diplomacy and dealings with other states. The modern idea is that the function of the state is to develop its internal resources. The conservation movement and the foundation of the agricultural colleges could not have resulted if the state thought only of its dealings with other states. A military establishment is coming to be an anachronism. The fighting strength is in the soil.

"Internal development is more important than the maintenance of an army and navy. One per cent of the total federal appropriations goes to agriculture. We can call it large only as a sum and in comparison with former appropriations. A proposal has been recently made that we protect the Isthmus of Panama by letting the jungle grow up. I believe it is the obligation of the American people to show other nations what can be done with this land in the way of development.

"We must preserve our farms merely as farms. We must have them as open country. It is important that we should preserve our waterfalls and natural phenomena. The time is coming when the state will own such property for the benefit of all the people.

"The parks which I spoke of must not be too refined. Human nature demands a certain amount of the raw and rough. This is one reason for the growth of the Boy Scouts and the willingness with which men go to war. The nature background never becomes a part of a man in silk socks and patent leathers.

"In the future the salvation of the state will be in-so-far as it relates itself to nature. The recognition of this fact will be the next great step forward and not socialism. For this principle is much deeper than socialism. And in this step the farmer will have an important and honorable part."

* * *

The outlook for the present season in intercollege series appears very bright for Agriculture. At present they lead C. E., their nearest rivals, by five points. In the three events still to come off, baseball, crew and track, Ag. will show up well. The track team which won second place last year should win first place or at least repeat its previous performance. Eight veterans of last year’s champion baseball team are out this year, and there is some promising new material. The chances for the crew to repeat appear very good. At present there are three combinations practicing. As was the case last year, Ag. has more men out for crew than has any other college.
On the afternoon of March 16, the team of the College of Agriculture again won the intercollegiate carnival with 31 points as against 17 of the Civil Engineers, their nearest rivals. The following Ag. men won points: S. S. Burdige, '14, second in the Rope Climb; Edward Braileove, '14, third in the backward race; B. H. Frary, '13, and H. L. Page, Sp., first and A. S. Kenerson, '15, and E. C. Viner, Sp., third in the wheel-barrow race; H. H. Knight, '14, first and E. C. Viner, Sp., fourth in the Sack race; T. E. Milliman, Sp., second and B. H. Frary, '13, third in the potato race; and H. H. Knight, '14, and H. L. Page, Sp., first and L. J. Benson, '14, and G. W. Crosier, Sp., second in the elephant race. In the rooster fight, which was not counted in the final score, H. H. Knight, '14, and M. J. Wilkinson, '14, tied with the Arts team, both going to the floor together. The Carnival only counted one-half the number of points usually allotted to an event in the inter-collegiate championship.

* * *

Mr. Ayers is now spending his time in extension work.

* * *

Mr. L. J. Cross, Department of Agricultural Chemistry, attended Farmers' Institutes at Greenwich and Schenectady, during the week, March 18-23.

* * *

On Monday evening, March 18th, the Sophomore class in Agriculture held one of the best attended and most enjoyable meetings of the year. Dr. J. G. Needham gave a very interesting talk on organization, which was followed by a stunt by Mr. W. B. Hare of the Department of Meteorology. After the class quartette had rendered a few selections, a small "feed" was served.

* * *

The annual banquet of the Junior class in Agriculture was held Friday, March 29, in the rooms of the Home Economics Department. Among the speakers were Professor E. G. Montgometry of the Department of Farm Crops; Prof. John Bentley, Jr., of the Forestry Department, and Mrs. H. B. Young of the Home Economics Department. Miss Gertrude Marvin, Albert Horner, '13, M. D. Leonard, '13, and E. G. Eldridge, '13, gave stunts. The banquet was prepared by the women of the class. All those present agreed that this was the most successful function ever held by the class.

* * *

The students in the course of market milk and milk inspection visited a number of farms around Elmira just before the Easter vacation. They visited Atwater Bros. Creamery, Mrs. Susan Crane's Farm, Mrs. Liscun's Willowbrooke Farm, and four of Dr. Zimmerman's Farms.

* * *

Mr. E. S. Guthrie now has supervision of the creamery laboratory besides the instruction of the regular students.

* * *

Mr. A. C. King, a well-known fruit grower of Trumansburg, N. Y., was at the college on March 22 for consultation with students. On April 1st, Mr. M. S. Nye, a cattle breeder of Preble, N. Y., addressed the Round-Up Club and on the following day had short talks with a number of students. This is a new custom in the college; it is intended to give students the opportunity of meeting successful farmers and discussing their problems with them.

* * *

The annual Ag. Athletic Rally held on April 16 was for the first time really representative of the college. The programme for the evening included talks by Lieutenant Twesten, Captains Hook and Ward of crew and baseball, clever "stunts" by T. M. Hunt and M. Rothstein, and music by the Mandolin Club and C. W. Whitney was completed by the most important feature of the evening, the presentation of medals by Dean Bailey to the members of the various Ag teams. At the social hour after the meeting, the stu-
The Cornell Countryman

dents enjoyed the apples won at the Indoor Carnival.
Immediately following the rally, the track, baseball and soccer teams held elections at which these men were chosen:

Soccer—Captain, W. Creifelds; manager, L. B. Smith.
Track—Captain, J. R. Van Kleek; manager, E. G. Misner.

* * *

The annual meeting of the New York State Ginseng Growers' Association was held at the College of Agriculture on March 28-29. Professor H. H. Whetzel, in charge, arranged a very interesting and instructive programme. About 30 growers attended. A regular laboratory study of the ginseng plant and its diseases was conducted during the forenoon of each day, and those who attended were certainly benefited by new observations and ideas. A part of each session was devoted to a discussion of questions of general interest to growers. Also an extensive exhibit of specimens, showing the diseases of ginseng and golden-seal, was carried on.

At the election of officers for the ensuing year, the following were chosen: President, Dr. J. A. Thomas of Moravia; vice-president, A. P. Storrs of Owego; secretary-treasurer, C. M. Goodspeed of Skaneateles.

Lowell Byrns Judson

The death of Professor Lowell Byrns Judson occurred Thursday, March 7th, at the Albany Hospital, following an operation for appendicitis. The funeral was held at his late home in Kinderhook, Sunday afternoon, March 10th, at 2:30 o'clock.

Professor Judson was born in Lansing, Michigan, December 30th, 1877. He attended Northwestern University, 1896–1898. In 1898 he entered Harvard University and took his A.B. degree in 1900 at Harvard. In 1903 he took the degree B.S.A. at the Michigan Agricultural College, East Lansing, Michigan. From 1903 to 1906 he was Professor of Horticulture at the Idaho Agricultural College, Moscow, Idaho; 1906 to 1911 Assistant Professor of Horticulture at the New York State College of Agriculture, Ithaca, New York. Since leaving Cornell Professor Judson has been associated with his brother in managing their fruit farm at Kinderhook, N. Y.
FORMER STUDENTS

ERNEST KELLY.

Sp., '06—Ernest Kelly was born in Washington, D. C., Nov. 28th, 1883, and was educated in the public schools of this city. After two years of high school, he went to work on a farm in the State of Maine where he stayed until the spring of 1902, entering college as a special student in Agriculture in the fall of that year. He spent four years as a special student, leaving college in June, 1906. While at Cornell he was vice-president of the Ag. Association, chairman of the Ag. banquet committee one year, on the Country-Man editorial staff two years, and manager of the first uniformed baseball team to represent the College of Agriculture. He also assisted in teaching bacteriology and milk-testing in the Winter-Course for two seasons.

Mr. Kelly worked for a year with the Fairfield Dairy Co., at Caldwell, N. J., where about 650 cows are kept for the production of "certified" and "nursery" milk.

He then equipped and operated a bacteriological laboratory for the Alderney Dairy Co., of Newark, N. J., also having charge of the pasteurizing, bottling, etc. From there he went to Seattle, Wash., where he was Deputy State Dairy and Food Commissioner for a year, accepting a position with the U. S. Dept. of Agriculture in the Spring of 1910. On Jan. 1st, 1912, he was appointed to take charge of the market milk investigations of the department. Mr. Kelly is married and says he has one husky boy that he expects to send to Cornell some day.

'94 W.A.—Irving C. H. Cook is living on the farm where his father was born in 1829 and still resides, at 83 years of age, not only on the same farm but also in the same house at South Byron. Mr. Cook has always been deeply interested in Horticulture particularly, and last year was one of five who engaged with Prof. Whetzel to maintain a field laboratory in his home town in Genesee County. Mr. Cook was honored during the recent Farmers' Week with being elected president of the State Drainage Association, and is a great enthusiast over the importance of, and benefits derived from, the practice of drainage.

'97, W.A.—C. S. Greene is in charge of the $500,000 farm at the "Sailors Sung Harbor" home at Staten Island, N. Y.

'00, B.S.A.—Mr. G. M. Bently is now State Entomologist in Tennessee and is teaching in the University of Tennessee. He has recently been active in the organization of the State Bee Keepers' Association and is also secretary and treasurer of the State Horticultural Society.

'02, W.D.—J. M. Risley is superintendent of the Monhabie Farm at Bridgeport, Conn.

'04, A.B.—Mr. C. W. Howard who after his graduation entered the field of Economic Entomology has been appointed to a position under the State Entomology Department of Minne-
sota. His work for the summer will be largely in the fight against the grasshopper plague. He had much experience along this line during his five years of entomology work in South Africa.

'05, M.S.A.—W. S. Thornber of Brookings, S. D., has given up College work to take up community development work in the Lewiston Clarkston Valley. He is now the Chief Horticulturist for two large orchard development companies and has about seven thousand acres planted. As a part of this community work Mr. Thornber's Company has organized a practical school of Horticulture which has become very popular in that section.

'05, M.S.A.—Mr. R. S. Woglum has returned from India, after a successful search for a parasite to kill the White Fly, a pest that has cost southern fruit growers millions of dollars and which the government has been trying to eliminate for thirty years. As a result of Mr. Woglum's hunt it is quite probable that the control of the White Fly is now in sight and that it may be completely annihilated in this country. Mr. Woglum is now in Orlando, Fla., carrying on experiments with White Flies and some of the trees infected with the parasites which he brought to the United States from India.

'06, Sp.—A. D. Hoose has changed his address from Duane, N. Y., to "Orchard Farm," Peekskill, N. Y. This is a large fruit farm and Mr. Hoose has taken the position of superintendent.

'06, B.S.A.—F. E. Peck whom we recently reported as having taken a position as bacteriologist for the Hill Dairy Co., Chattanooga, Tenn., is now with the Clover Farm Dairy of Memphis, Tenn., the Hill Co. having discontinued business. Mr. Peck now has charge of the fermented milk department and the output of the plant is 1500 quarts of cultured butter milk daily.

'06, W.D.—H. W. Middhaugh, formerly butter maker in the department has been promoted to superintendent of milk supply.

'07, B.S.A.—Edward W. Cleeves is manager of a large Holstein farm owned by W. D. Sargent. His address is Somerset, Pa.

'07, Sp.—H. C. Atwater has changed his address from Collinsville, Conn., to Agawam, Mass. He is with his father in the nursery business and it was owing to the very rapid growth of this business that the change of address was made necessary. Mr. Atwater will make his first shipments from the new location this spring.

'09, B.S.A.—Geo. H. Miller, is now connected with the Office of Farm Management, U. S. Department of Agriculture. He will have charge of Special Farm Cost Accounting investigations in Western New York.

'09, B.S.A.—R. L. Rosman is moving from Hillsdale, N. Y., to Bancroft, Iowa, where he and his brother have a large tract of land.

'09, W.A.—G. S. Manrow has accepted a position with Mr. R. E. Herd on the latter's 150 acre small fruit farm at Northeast, Pa.

'10, B.S.A.—Mr. G. T. Scoville gave up his position as teacher in a school in Fresno, Cal., to accept a position with the office of Farm Management, U. S. Department of Agriculture. After April 1st, he will be located at Elmira, N. Y.

'11, B.S.A.—Miss Grace L. Bennett is connected with the Binghamton Tea Rooms, Binghamton, N. Y.

'11, B.S.A.—L. R. Simons is teaching agriculture in the high school at Gowanda, N. Y.

'11, W.D.—I. C. Carpenter has accepted a position with the Sharpless Separator Co. of Westchester, Pa. His work will be in connection with the sale and operation of the Sharpless Milking Machine. He will have general supervision of a given territory and his work will be largely educational.

'12, W.A.—H. S. Halstead has a position as herdsman on the farm of Artemas Ward at Orangeburg, N. Y.

'12, W.A.—John Telfer is superintendent of a farm owned by Francis Newton at Easthampton, Long Island.
GENERAL AGRICULTURAL NEWS

THE NATIONAL DRAINAGE CONGRESS

The National Drainage Congress which assembled in New Orleans, April 10-13 helped to bring the day of the 10 acre intensively cultivated farm near at hand throughout the wet land areas of the United States. In these areas, drainage will open up some 75,000,000 acres of highly productive land to purchase by thrifty farmers.

The lowlands, because of the nitrogen bearing humus are so fertile that a single farmer can cultivate only a very small area. This will mean a dense rural population and consequently many advantages in the way of good roads, rapid transit, nearby schools and churches. The canals necessary for drainage will result in cheap transportation. Drainage will put an end to malaria. It will also aid in lowering the cost of living.

The National Drainage Congress besides demonstrating these advantages is asking the federal government to provide the ways and means necessary for complete surveys, for creation of a comprehensive plan of reclamation by drainage of all the wet land states and for the opening up of navigable drainage canals into which local drainage canals can empty. The government is asked to solve all the interstate problems involved.

Louisiana has solved all the local problems incident to the drainage of her 10,000,000 acres of alluvial prairies, and hundreds of dredges and road building machines are now at work. The money for this work amounting to some $200,000,000 ultimately, is being supplied through the sale of state protected district drainage bonds. The bond plan will be given particular attention. It has just been approved by the Louisiana Supreme Court.

THE POULTRY CENSUS

The latest government report of poultry on the farms of the United States show 295,880,190 fowls reported from 5,585,932 farms, with a valuation of $154,663,307. These figures must not be taken as the sum total poultry business of the country, however, as there are many special poultry farms with large incomes, besides town poultry plants which total largely. All of these according to the estimate of the Secretary of Agriculture, would bring the whole number up to 700,000,000.

THE VALUE OF SOIL SURVEYS

In a report to Secretary Wilson, Prof. Milton Whitney, Chief of the Bureau of Soils says in part, "The soils surveys are of value to the railroads in giving reliable information with regard to the agricultural possibilities of the territories through which they run, and which they wish to develop. They are of benefit to real estate companies because they give an impartial and authoritative basis for dealing in land. Thus, they prevent speculation and fraud. They are of special value to the Immigration Service in placing foreigners in sections, the soil conditions of which are similar to those with which the immigrant is already familiar. This is an essential condition to the success of most immigrants in agriculture.

"To the farmer, soils surveys are of great value. They give him a means of comparison with soils of other localities; they show which crops are fitted to his land; they give him an advantage in the sale and purchase of land and the securing of loans."

GASOLINE VS. HORSES

Dr. C. W. McCampbell, assistant in animal husbandry at Kansas State Agricultural College, states that many firms in cities are forced to use motor trucks simply because they cannot get good, heavy, sound draft horses. The expense of running these auto trucks is considerable and these companies are ready to exchange them for draft horses as fast as they get desirable ones.

High class draft horses are selling for $225 to $500 each, the majority selling for about $300. The demand is for first-class animals weighing over
1700 lbs., and less than 5% of all the horses received in Chicago during the past year were of this type. The demand for big horses has caused many local buyers to ship common, inferior horses to market. Men who are looking for draft horses will not bid on these horses and therefore many people think the horse market is dull. Farmers are also looking for heavy draft horses. They realize that the heavy draft horse is the cheapest motive power to be found for the average farm.

THE OLEOMARGARINE SITUATION

The Congressional Committee on Agriculture gave hearings on March 15 to the dairymen of the country in opposition to the Lever Bill (H. R. 20,281). The Lever bill repeals the provision of the present law, Section I, which makes oleomargarine subject to the laws of the states into which it is shipped and also permits its coloring in imitation of butter. The hearings were arranged by the National Dairy Union, President George L. Flanders having charge of the presentation of the case.

Ex-Governor Hoard of Wisconsin said at the oleomargarine hearing of 1900:

"There is no credible evidence to show that oleomargarine is innocuous; no evidence to show that when eaten continuously in place of butter it is not harmful. But there are reports in great abundance to the effect that oleomargarine is harmful.

"There is abundant reason for this. The normal heat of the human stomach is 98 degrees. Butter melts at 92 degrees, 6 degrees below the heat of the stomach (passes into pancreatic emulsion and digestion). Nature designed this fat in its raw state for food.

"Oleomargarine melts at the varying temperatures of 102 and 108 degrees, a temperature no healthful stomach ever attains. As a consequence, this unnatural foreign fat must be expelled by sheer gastric action and force.

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* * *

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Now You Need a Camera

Suppose you go to see a farm or lot of prize stock, a Camera will be needed. If you should make a report of what you saw, a few pictures would mean a lot. A camera is easy to operate. Let us show you the different kinds. You should get a camera suited to your needs.

When You Go Home

Perhaps you will need a Cornell Song Book. The red edition is for mixed voices. There are the view books and pottery. In a class by itself is the jewelry. We have the best dies made for Cornell jewelry. Take your choice between the old and the new seal.

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Morrill Hall

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RESERVOIR avenue is now completely shut off by the excavations for the new auditorium. The building backs up toward the easternmost house on Reservoir Avenue, being just in front of the Tailby cottage and coming within about forty feet of it. It faces to the south toward the Veterinary College and the playground, looking down the direction of Garden Avenue, and occupying the northern end of the school-gardens. It is an immense building, being more than one hundred and fifty feet in each direction over all, or a space each way equivalent to about two and one-half times across a four-road public highway. This will be one of the largest auditoriums in western New York and will seat 2500 people and probably more. It will have more than twice the seating capacity of the Armory or of Sibley Dome.

The general shape of the building is something like a horse-shoe, the curved part being to the south and the plain part facing north toward the reservoir. The entrance from the south is up flights of stone steps and between six imposing stone columns. This entrance is flanked on either side by eight columns extending back along the curved part; and back of these columns is an ambulatory or loggia to which exits are provided from the auditorium in case of necessity. Part of the floor of the auditorium is sloping, with an orchestra pit at the front end and below the stage. The stage is very large, with capacity to accommodate two hundred persons. This stage will be set off from the auditorium by heavy curtains so that it may be used for class-room and similar purposes. Looking from the stage to the auditorium floor, one sees the galleries, in the rear of which is a semi-circle of 30 columns against the rear walls. Outside the auditorium proper and next the ambulatory is a corridor extending around the complete semi-circle with openings by eleven glass doors into the seating room.

A complete ventilating system is provided, with the fresh air supply underneath the seats, thereby eliminating draughts.

The building is not an auditorium alone. It is to be used also for class-room and laboratory purposes. The basement is well lighted, being mostly above ground. Under the stage is a laboratory-room 66 x 20 feet. Extending completely around underneath the ambulatory and corridor is a room measuring about thirty feet wide and about two hundred and fifty feet in length, all of which, except the part under the front entrance, is well lighted and is available for laboratory and similar purposes. The center of the basement underneath the pit, is occupied by a plenum in which is the ventilating and other apparatus. There are entrances to the auditorium at either corner on the rear, so arranged that guests may have access by means of these entrances both to the stage and to the main corridors above.

In each of the rear corners on the first floor are two laboratory or office
rooms as well as lavatories to serve the stage. There are men's and women's general lavatories also underneath the front entrance. On the second floor there are four similar laboratories or offices in the rear corners.

The building will probably be the most imposing structure on the Cornell Campus and it will serve as the connecting architectural link between the agricultural compound and the main Campus. The contract calls for the completion of the building November 1, 1912.
THE NEW YORK HIGH SCHOOL COURSE IN FARM MECHANICS AND DRAWING

By F. W. Howe

Specialist in Agricultural Education, Albany, N.Y.

With the beginning of the school year 1911-12, a course requiring one year's work in Farm Mechanics and Drawing went into effect in fifteen of the seventeen New York high schools that had adopted the four-year vocational course in Agriculture. For special local reasons the mechanical work in two schools (Gowanda and Albion) were postponed one year but will be given in the school year 1912-13. Upwards of a dozen additional schools are likely to adopt the four-year agricultural course before September 1912. The total number of New York high schools teaching Farm Mechanics and Drawing as a part of this course in 1912-13 will, therefore, approximate thirty.

The subject of Farm Mechanics is comparatively new even in the state agricultural colleges. The popular understanding of what is embraced in it is not yet nearly as definite as it is in the case of Manual Training. There is a strong tendency even among teachers and school principals, to confuse the new subject with the older one. For the sake of making the distinction more definite and giving some guidance to the preparation of those who are looking forward to securing a New York State certificate as agricultural teachers, it is deemed advisable to set forth a rather fundamental characterization of the high school course in Farm Mechanics.

Perhaps this may best be approached negatively. Farm Mechanics is not Manual Training, except incidentally. As usually understood and practiced in the schools, Manual Training has a general rather than a specific purpose. Its advocates have always taken care that it should stop short of developing in the pupil a greater interest in any one sort of hand occupation than in others. It is supposed to develop a general dexterity of hand that may later be turned with equal ease in the direction of any one of several trades, but having its chief value in mental culture and discipline. The typical instruction in the earlier manual training courses was set forth in a carefully graded series of formal exercises, of which certain standard types of mortices and joints are familiar examples. The work had no objective beyond the attainment of accuracy, of execution, and the tool-using skill, mental development, and moral training thus incidentally acquired.

The "culture" concept of manual training proceeds upon the same assumption as that which supported the old alphabet method of teaching reading—that no progress can be logically made in doing the real thing until the mechanical elements of it have been abstractly learned in carefully graded "exercises." It is the adherence still given to such notions, and the practice resulting from them, that leads Professor Chamberlain to say: "I know school men of broad education, open-minded and scholarly, who still refuse to believe that the manual training of today has a place of importance in the school."

However, Manual Training is continually improving; but the improvement is coming through a rejection of the limitations of its earlier ideals and adopting instead, some of those that are suggested by the practice of the most progressive industrial and trades schools. The only point here made is that Manual Training, as popularly understood, is not identical with what is meant by the term Farm Mechanics. And the real purpose of the latter is largely defeated if the range of practical work done in the course is limited by the older Manual Training ideals.

On the other hand, Farm Mechanics is not specific trades instruction, unless a new trade, that of the farm mechanic,
is to be recognized. Farm Mechanics does not attempt to teach the student the fundamental principles underlying all trades nor any special degree of skill in any of them. But it does attempt to teach him how to do in a practical way, a large range of specific things that, separately considered, logically belong to one of these distinct trades, and yet belong also to the work of an all-round modern farmer.

Because of its novelty and the general lack of precise information on the subject, the year’s work in Farm Mechanics included in approved New York high school courses in agriculture has been definitely outlined in a special syllabus issued by the State Education Department (Bulletin 500). This is the first syllabus published on the subject for high school use. It covers a range or work broader than is yet offered in some college courses in Farm Mechanics. It is used as a guide in at least one of the New York State Schools of Agriculture. Every prospective teacher of agriculture in New York high schools maintaining an approved vocational course is expected to become familiar with this syllabus. If his own training or practical experience has been limited in this line of work, it may be necessary that he shall supplement it by special study before a state certificate can be secured.

The caution is usually needed against spending too much time in execution after a piece of work has been carefully planned. (The planning is mostly done in the mechanical drawing class.) Time is the one thing which the practical farmer must learn to economize. Nobody stands ready to pay him forty to sixty cents an hour for achieving perfection of workmanship on a quick repair or construction job. Neither can he afford to pay at that rate for work that can be made efficient and serviceable at a lesser cost. One of the chief reasons why needed improvements in buildings and equipment are not made more rapidly on the average farm is the prohibitive cost of labor that is skilled—more or less. The Farm Mechanics student must, therefore, learn how to get things done and as many things as possible during his year of special training in this line.

It is recognized that this sounds much like an excuse or justification for slovenly work. The high school principal is sometimes alarmed at the quantitative suggestion. It is true that some work must be done “over” until it comes up to a reasonable standard of good execution. But a piece of work in Farm Mechanics must be judged by its purpose and its efficiency. It is made to be used rather than to be admired for the excellence of its workmanship. comparatively little of the real mechanical work done on the farm is to be varnished—much of it may not even be painted; but it should be correct in principle and economically adapted to its purpose. The more of such work that can be done in the year’s course in the high school, the better. Space will not permit here an enumeration of the topics that should be studied; the syllabus referred to affords full information to those who wish it.

As distinguished, then, from Manual Training, the course in Farm Mechanics is not closely graded, it aims not so much at personal skill of hand as at the understanding and application of mechanical principles in farm work, and its products are designed to be put to the test of practical use rather than to satisfy mere esthetic standards. It prefers, for example, to produce a mechanically correct “evener,” rather than an artistically correct dove-tailed joint on an inlaid collar box. It builds a concrete wall rather than a china closet. It designs the model of a farm gate or a gasoline engine rather than a hand loom. It constructs a set of farmers’ bulletin cases rather than an ornamental pen tray. It makes a serviceable grafting tool in preference to a carved paper knife. It does not discourage skill and good workmanship, but it saves time to develop the “know how” to attack all sorts of problems that the handy man on the farm is expected to
solve. It does not teach the "use of tools" but it uses tools in the construction of things that are themselves to be used.

Parallel with this course in Farm Mechanics is the related course in Mechanical Drawing. It may seem hard to say here that care should be taken not to over-emphasize technical skill and exactness. Mechanical Drawing is generally conceived as having its chief value in this sort of discipline. And repeated exercises for the sake of greater skill may not, in this course, constitute the positive hindrance that they sometimes do under a wrong conception of the course in Farm Mechanics. But here again it must be remembered that the time element is not unlimited and that the purpose of the work is not to develop professional draftsmen. A penciled memorandum sketch may often be more serviceable to a busy farmer than an elaborately executed mechanical drawing; but the better he learns how to draw, the more serviceable his hasty sketches may be. The principal caution to be suggested relates rather to suitable subject-matter in the drawing course.

It is not the purpose of the course in Farm Mechanics and Drawing to train students away from the farm. If some of them learn through it to believe that they are better fitted to become carpenters, draftsmen, or machinists, than practical farmers, the course will still have had great value for them in having enabled them to discover themselves, and on its culture side, in developing a better appreciation of the modern farmer's problems.

As to the relative value of the Farm Mechanics course in a four-year scheme of high school agricultural instruction, the State Education Department is entirely willing to submit its judgment to the test of time, provided only that the right conception of the real purpose and plan of the course is understood by teachers, students and school patrons. Already it has proved the most popular feature of the entire vocational course in agriculture. Set at the beginning of the four years' work, its attractiveness exerts a strong pull upon the farm boy who is debating whether, if he is to be "only a farmer," it is really worth while to take a high school course at all. Preceded as this work is by an elementary agricultural course in the eighth year, the boy has a proper background for his study of the mechanics of farm work; and with this year's work outlined and covered in the ninth grade, he may draw upon it or extend it in any of the three years that follow wherever he has need of using his mechanical knowledge. Such opportunities come naturally in connection with the study of tillage implements, the construction of poultry appliances, and in the use of potato planters and diggers, spraying machinery, cream separators, and other devices that belong to the special courses taught. Furthermore, if he is not held too strictly to mere drill exercises, he can acquire in the first year the fundamentals of this entire range of farm-mechanic interests, at a time when they appeal to him strongly, and when he is not yet adequately prepared to take up the more theoretic and scientific phases of agriculture that properly come later in the high school course.

Finally, the agricultural teacher who is prepared to give correct and efficient instruction in Farm Mechanics thereby proves his value to the community more conclusively than he could by any amount of advanced scientific information that has not yet been "reduced" to local practice. The patron of the rural high school appreciates the teacher who can "do things" with his hands, who can milk a cow, harness a horse, and handle a plow. And he especially appreciates and expects this ability in the teacher of agriculture. When the Farm Mechanics class makes real things at school that actually "work" when put to practical application on the home farm, the teacher has established in the farmer's mind a hospitable attitude toward the newer ideas of scientific agriculture, which otherwise are often met with a somewhat doubtful eye.
AGRICULTURE has never attracted so much attention from the world at large as to-day, nor has it ever needed so much attention. In the past, little thought has been given to the future of the food supply of the country, but of late it is beginning to be seen that with the exhaustion of available lands in the west, and with our increased consumption, we will soon face new and grave problems. Typical of this greatly increased interest in agriculture is the growth of our college, and the general financial support it is receiving from the state shows that our legislators recognize the important role agriculture will play in the future of our country.

In 1904 the College of Agriculture at Cornell University became a state college by an act of the legislature, appropriating a quarter of a million dollars for new buildings and general expenses. The establishment of the college as a state institution gave great impetus to the work and set in motion many additional kinds of effort. The number of students in attendance at the college is a true indicator of the interest felt in the institution throughout the state. The registration has greatly increased since the first appropriation. In 1904 it was 296; it has kept increasing year by year until in 1908 it was 655. During the past year the total registration was 1,556.

This large registration has produced a serious and critical condition. In the Departments of Poultry Husbandry, Plant Physiology, Plant Pathology, Entomology, and Biology, many have been denied admission. In many laboratories a number of students have been turned away for lack of room, and in agriculture, as in no other study, laboratory practice is essential. All the laboratory space in the college is fully and continuously used, and yet certain courses have had to discontinue laboratory work altogether. The department of Biology in the elementary course expected about 150 students, but it has registered 306 and refused admission to 85. Plant-breeding last year had 34 students and now has 55 with no more laboratory available. These are but a few of the many such examples of the crowded conditions of the majority of classes.

The increased registration of regular four year students in some of the principal departments is shown in the following table:

<table>
<thead>
<tr>
<th>Department</th>
<th>1908-09</th>
<th>1911-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pomology</td>
<td>87</td>
<td>351</td>
</tr>
<tr>
<td>Plant Pathology</td>
<td>51</td>
<td>105</td>
</tr>
<tr>
<td>Farm Mechanics</td>
<td>107</td>
<td>145</td>
</tr>
<tr>
<td>Farm Crops</td>
<td>40</td>
<td>146</td>
</tr>
<tr>
<td>Entomology and Biology</td>
<td>281</td>
<td>688</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>105</td>
<td>427</td>
</tr>
<tr>
<td>Plant Breeding</td>
<td>34</td>
<td>168</td>
</tr>
<tr>
<td>Home Economics</td>
<td>14</td>
<td>125</td>
</tr>
<tr>
<td>Plant Physiology</td>
<td>69</td>
<td>200</td>
</tr>
</tbody>
</table>

In January 1910, the "ten year plan" of the College of Agriculture was first proposed. The "ten year plan" is the general scheme that was first outlined for the purpose of putting into graphic form the probable needs of the College of Agriculture and the Veterinary College in the way of buildings, for the succeeding decade. The outline of this plan was submitted to the state legislature.

The legislature, realizing the need of the greater facilities for teaching and experimental work, has broken all records for the amount of appropriation. The legislature authorized the College of Agriculture to expend $917,000, of which $788,000 is immediately available. The Veterinary College received $105,000, bringing the total up to $1,022,000. Of this amount, $329,000 is for the erection of new buildings for the use of the Departments of Forestry, Agronomy, and Animal Husbandry; $129,000 of
this amount is not appropriated, but the College is authorized to lay contracts for it. The following is the distribution of the appropriation:

<table>
<thead>
<tr>
<th>Department</th>
<th>Est'd</th>
<th>App'd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating plant</td>
<td>$50,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Auditorium</td>
<td>113,000</td>
<td>138,000</td>
</tr>
<tr>
<td>Poultry Husbandry</td>
<td>90,000</td>
<td>90,000</td>
</tr>
<tr>
<td>Plant Industry</td>
<td>245,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Home Economics</td>
<td>154,000</td>
<td>154,000</td>
</tr>
<tr>
<td>Greenhouses</td>
<td>50,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>252,000</td>
<td>129,000</td>
</tr>
<tr>
<td>Chemistry</td>
<td>146,000</td>
<td></td>
</tr>
<tr>
<td>Horticulture</td>
<td>211,000</td>
<td></td>
</tr>
<tr>
<td>Entomology, Zoology</td>
<td>234,000</td>
<td></td>
</tr>
<tr>
<td>Dairy Industry</td>
<td>144,000</td>
<td></td>
</tr>
<tr>
<td>Agronomy</td>
<td>100,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Rural Art</td>
<td>48,000</td>
<td></td>
</tr>
<tr>
<td>Farm Mechanics</td>
<td>133,000</td>
<td></td>
</tr>
<tr>
<td>Barns</td>
<td>19,000</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,989,000</strong></td>
<td><strong>$811,000</strong></td>
</tr>
</tbody>
</table>

In the case of the Poultry Husbandry building, the plan calls for small buildings and appurtenances to cost $19,000 which has not yet been secured. With the appropriation of this year, nine buildings will probably be in course of construction at the same time. In the future as one passes through the Campus of the College of Agriculture from west to east, he will pass in succession the following new buildings: the Auditorium with class rooms, the Agronomy extension, the Home Economics building, the forestry section of the Plant Industry building, the Poultry Husbandry building, the heating plant, the headquarters building for Animal Husbandry, the stock judging pavilion and finally, the barns.

The Department of Forestry is to have a section of the proposed Plant Industry building. This building and its wings will eventually house the Departments of Plant Breeding, Plant Physiology, Plant Pathology, Forestry, and others. The forestry section will be the first part of the building constructed. It will be west of the Poultry building near the Carnegie Filtration plant. The Forestry Department is now occupying a few rooms in the basement of the main building. In the fall this department will be moved to the east end of the third floor of the new Home Economics building. For the construction of the Forestry section the sum of $100,000 is appropriated.

A like amount is given by the state for the building of an extension on the Agronomy extension of the main college group. The present Agronomy building will form the stem of a “T,” of which the addition will be the top, if tentative plans are followed. As the Dairy building already has an “L,” the addition on the Agronomy building will balance the group. A large lecture room and several laboratories and recitation rooms will probably be provided by the addition.

The Department of Animal Husbandry receives the largest of these appropriations. Its share of the total contract is $129,000, of which $91,000 is for a laboratory pavilion and $38,000 is for a judging pavilion. These buildings will form the eastern end of the agricultural quadrangle, now bounded on the north by the Home Economics building and on the south by the main buildings of the college.

Besides the appropriations for buildings, $265,000 is appropriated for the current expenses of the college, and $147,000 in what is known as the supply bill. Of this, $50,000 is for extension work on farms and with the farmers of the state; $30,000 is for equipping the Home Economics building; $15,000 is for equipping the Poultry Husbandry building; $10,000 is for additions, etc.; $10,000 is for grading and walks; $4,000 is for Summer School; $20,000 is for providing extra instruction in physics and chemistry; and $2,000 for investigating the diseases of gladioli and other bulbous plants.

The home economics and poultry buildings and the central heating plant will be completed next fall, and will relieve the congestion in the main college buildings. If the auditorium is ready for occupancy by the opening of the short course in December, most
of the departments will have enough room during the winter. The crowded condition of the dairy building will be relieved by the poultry department moving into its own building and the department of rural art moving into the home economics building. In the main building the room vacated by the departments of home economics and forestry can be occupied at once. When the heating plant is moved and the auditorium completed, the present auditorium of the main building will be used as a library. The book stacks will be in the present boiler room.

The new horse barn will be completed early in the summer. The architects are now at work on the plans for the Agronomy extension, the Forestry section, and the two Animal Husbandry buildings.

The new buildings are of fireproof construction, being among the best buildings on the Campus. The grounds of the college will necessarily be in a very unfinished condition for several years; but it is hoped that the western end of the compound will be put into complete condition next year and the year after. The western end of the road running east and west from the University Library, in front of the buildings, will be put in condition this summer, and some of the tree planting has already been done.

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WESTERN TILLAGE METHODS IN HUMID AGRICULTURE

By Alfred Atkinson

Agronomist at Montana State College, Bozeman, Mont.

WITHIN the temperate zone, agricultural land areas are commonly classified on the amount of the precipitation. Various divisions have been suggested, but the custom of considering localities as humid, with over 20 inches precipitation; as semi-arid with less than 20 and over 12; and as arid with less than 12, is now pretty generally followed. Previous to a rather recent period, semi-arid and arid areas were considered as of value for grazing purposes only. The sad experience of some pioneer western crop raisers had seemed to prove that the country was too dry to make crop raising profitable.

During the past twenty years, the increase in population, the back to the land movement, and the human tendency to go west, have resulted in the settlement for farming purposes of much of the western grazing land. A certain percentage of the settlers have failed. A large number have met with a fair degree of success. A few have been highly successful. The returns on these successful farms indicate agricultural possibilities in the semi-arid west, and the methods which have led to these successes are of interest.

The semi-arid or dry farming west extends over a wide range of territory and includes a variety of conditions. The annual precipitation varies from 12 to 20 inches. The distribution of this, which is an important factor, is different in different localities. In some of the sections west of the Rocky Mountains, a large percentage of the moisture falls during the winter months. In other sections 60 percent of the precipitation comes during April, May, June and July. The distribution of moisture supply influences the cropping system and tillage methods.

The average annual precipitation in the humid central and eastern states is from 28 to 50 inches. Some years when rather general drought losses are reported, the records show a moisture supply amounting to 30 inches. The fact that thrifty agricultural communities are established and comfortable homes maintained in localities of uniformly less than 18 inches sug-
The Cornell Countryman

early as a seed bed can properly be made, the land is double disked and in some cases rolled or packed. When packing is done harrowing follows immediately. The cultivation is designed to prevent unnecessary moisture loss by maintaining a surface mulch, and the seed bed is packed to bring the upper seed bed layer in close contact with the moist lower soil layers.

Throughout the corn belt and small grain states of the humid area, the practice, all too common, is to leave the corn ground or fall plowed fields several days or even several weeks after the soil is in condition for cultivation before any tillage is given. During this time moisture is being rapidly lost. The soil which contained a high moisture content to a depth of 8 to 10 feet loses the moisture until only the upper 3 or 4 feet contain available water for growing plants. When the dry period comes, and the water necessary for growth is not supplied from above, it is not present to be supplied from below. The result is serious reduction in yield and drought losses are reported. Had the unnecessary loss in April been prevented the equally unnecessary loss in July and August would not have been recorded.

A second feature of semi-arid soil cultivation which would bear more general imitation is the tillage immediately following the plow in spring.

FLAX GROWN IN 6 1/2 INCHES OF PRECIPITATION DURING GROWING SEASON

FLAX GROWN IN 6 1/2 INCHES OF PRECIPITATION DURING GROWING SEASON

gests the possibility of preventing these drought losses.

For the dry land farmer, prompt and thorough spring tillage is of the highest importance. The moisture which the soil contains when spring opens up must be held if a paying crop is to mature. As soon as the soil is dry enough, all fall plowed land is given thorough surface tillage. To get over the fields quickly and stop the loss of moisture the land is harrowed. In case of rain a second harrowing is given.

Before planting, which is usually as
plowing. The practice in many humid sections is to plow all of the field and then go back to “work it down.” When moisture conservation is accepted as the governing essential, tillage is completed as the plowing proceeds. The land is harrowed or in the case of sod is disked as soon as the furrows are turned. This retains the moisture, prevents baking and sets aside the possibility of a condition where the land needs “working down.”

In practice two methods are generally followed to give prompt cultivation after plowing. One of these is to attach a small rotary disk to the plow. This cultivates the two furrows last turned. Another plan is to hitch a horse to one section of a harrow and have this horse walk on the plowed land beside the plow team. When the plowing is finished a surface mulch has been established.

For the man who is raising live-stock one of the perplexing problems is the question of pasture supply. It is not difficult to arrange for sufficient pasture if there is enough rainfall. By providing green crops to be fed when pastures are short, it is not difficult to provide in case of a dry season. The uncertainty makes it a problem to know how to arrange any particular year.

Observations in irrigated regions lead to the conclusion that an irrigation system in the pasture field is the only absolutely satisfactory method of solving the pasture tillage problem. Water cannot be accumulated in the pasture to provide against a dry period. The only method is to accumulate in streams or in reservoirs and turn on the supply when rainfall becomes inadequate. In many sections water may be supplied from wells. In other cases reservoirs in narrow ravines, will make possible the holding of spring flood waters. Where creeks maintain a supply through the season it is frequently possible to convey water to the fields by means of gravity ditches.

Where dams have to be built and pumping plants provided the initial outlay may be considerable. However, to be able to maintain the pastures at their maximum carrying capacity makes for certainty in the organization and much higher average returns from the live stock. During the season of ample rainfall the irrigation plant costs nothing for operation. For the season of drought a full supply of grass is assured and losses from the reduced condition of the live stock are prevented.
THE NEW LAZY CLUB BUILDING

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

In a large, rapidly growing institution, it is impossible to develop the social side of college life as it exists in the small college. It is the influence of helpful, inspiring instructors and the friendship formed that are prized by all college men long after the subjects taught have been forgotten. The class spirit which serves to strengthen the fraternal bond between members of the various classes in the small college is not found in the large institution except as it is fostered by athletics. That this influence may not be wholly lost the group or club system has developed.

The greatest hindrance to the attainment of this ideal on the part of the clubs is that these organizations usually meet in classrooms hedged about by certain official restrictions and in the class room atmosphere. The organization has no opportunity to provide the proper setting for its meetings, consequently there is not that informality which is so necessary to place every one at ease.

If the clubs could have small buildings, of such design as is expressive of their work and purpose, in which they could hold their meetings, no doubt they would be more effective than they now are. Each club could so furnish its quarters as to give the distinctive atmosphere so much needed in all these organizations. Then the student and instructor could meet on a common footing in friendly discussion of topics of common interest and thereby strengthen the bonds of friendship that would be an abiding memory throughout the life of each.

This plan may soon be realized. The Lazy Club, the oldest organization in the College of Agriculture, long enjoyed the distinction of having its own club room which was the center of interest to all persons who were lovers of plants. For more than fifteen years this club has dispensed information, good cheer, and friendship among the attendants at its meetings. It has a warm place in the hearts of scores of horticulturists now making name and fame throughout the United States, her dependencies and Canada. When the old greenhouse range was torn down, it was felt that the homely little building in which the Club met should be preserved as an historic landmark of the old College of Agriculture, as well as a center of sentimental interest. The building was preserved intact and will be moved to the new site assigned by Director Bailey. This will be associated with the new range of glass and near the main group of agricultural buildings.

It is proposed to enlarge the Lazy Club headquarters, incorporating the old building into a structure of larger size and more pleasing design. In cooperation with the Department of Landscape Art, plans have been worked out. The old club room, preserved in its original form, will be used as a library and reading room. The new club room will accommodate our present attendance, although no attempt has been made to popularize the Lazy Club. It will continue, as always, for the man of broad horticultural instincts.

It is fitting that the Lazy Club, the pioneer of all the agricultural organizations in the College of Agriculture, should lead the new movement. The Director has agreed to find half the money necessary to establish the club house on the new site. Unquestionably a large majority of the former members would like to express their good will toward the famous Club by contributing something toward its re-establishment. That the members may have an idea of the situation, circular letters have been prepared and mailed to all those whose address is known. The contributions already received from the very few who have been aware of the plans being made have been most gratifying to the committee.
THE COUNTRY CHURCH IN RELATION TO
THE RURAL COMMUNITY

By Stanley A. McKay, D.D.
Gasport, N. Y.

The recent wide discussion of the
relation of the church to the community indicates a deep conviction that the church is a potent factor in our modern life, and that so far from the age outgrowing it, there may now be opening before the church wider ranges of activity and greater opportunities for service than it has heretofore entered upon. This view, shared by nearly all writers, may well be considered by students interested in the forces which hereafter are to affect the rural life of this country. What conditions then, in a rural community, may the country church, if true to itself, be expected to meet and minister to?

First: The deepest needs, the noblest aspirations, and the most powerful motives of men are religious. The very essence of Christianity is religion. The primal and necessary activity of the church, both in service to men and in truth to its foundation elements, is the proclamation and propagation of religious truth. Its domain of transcendent benefaction is of things religious, spiritual, and eternal.

In this propagation of religious truth—the carrying of it into the hearts and lives of men—the church not only best fulfills the purpose of its existence, but supplies a need met by no other agency known to men. Anything that promotes this service of the church adds to its efficiency and should be encouraged, while anything that detracts from its spiritual influence or religious activity is to be dreaded and avoided.

Second: The next great need of men is to transmute religious truth into terms of everyday life, that is, to live it in our relations to other men. It has been found that the best, the only practical way to do this is to put into effect certain precepts known as moral principles. The need of exercising these principles is felt by many who would differ widely as to their source. Yet so thoroughly are the purest moral principles intertwined with the Christian religion that men at once judge the one by its incorporation with the other, i.e., a religion without morality is false and morality without religion has no sufficient nor adequate standard. It has thus come to pass that men look to the church for the best interpretation of morality and demand from it such interpretation as shall stand the severest test of human experience.

An imperative need today is a strong setting forth, by the church in the rural districts, of principles of morality. The old-time idea that the morality of the country is greatly superior to that of the city is forever past. The advent of the rural mail delivery has brought the great city daily newspaper into almost every home. Its stories of vice and evil are discussed and thought over everywhere.

During the next year those who study the moral conditions of rural life will be awakened to find that the gambling habit, expressed in terms of ante-election bets, is strongly entrenched in country districts. The morals of these communities cannot be said to be improving in any satisfactory way, and the actual deterioration of much of our rural population, along these lines, is a matter of serious and portentous import for the future. We are told that the hired man who once cooperated faithfully and intelligently with his employer is no longer to be found, while in far too many cases the son of the employer because of evil habits and lowering tendencies will never be able to fill his father's place.

To check all this, to turn the tendencies of rural life upward as they
ought to be, and can be, we need a clearer, stronger inculcation of morality by our country churches. The church must stand four square to every moral principle, and must make its influence for good felt in active and unrelenting opposition to all forms of evil, both public and individual. We are told that this may be done in the school. Not so in rural districts. The young and inexperienced person usually employed as teacher is not fitted for the task. The presentation of moral principles by a church is best accomplished through a congregation of mature people supposedly led by a pastor of strong intelligent convictions, and it is the province of such a country church to serve the community by a strong and aggressive setting forth of high moral ideals, and such a conserving of moral principles as shall promote the highest type of private life and of public citizenship.

Third: The question yet remains as to what activities the church may enter upon to best realize its influence upon the community. For the most part and happily there is no large class of the “submerged tenth” in the rural districts calling for such activity as is indicated by the term slum work. There are, however, individual cases where the hand of charity may find helpful service and it may be said that generally these needs are reasonably well met. Abundant avenues for service are open, in the case of the sick, and in cases of personal affliction. That church is not wise which leaves this form of helpfulness entirely in the hands of fraternal orders. The church has its duty, which done will not lessen good will nor the spirit of cooperation anywhere.

No hard and fast rule for any special activity, applicable at all times and places, can be laid down. In one field a reading room may meet public needs with great benefit and success, while in other fields the public needs may lie in entirely different directions.

One great opportunity for good in a rural community is the educative value of an organization conducted on a high plane of strict business principles. The church in its financial management ought to be as clear cut and as well conducted as the best of our banking houses. A sad lack of business management has brought many a church into public disfavor and has wrecked not a few. Such churches have not only suffered themselves but have lost the opportunity for inculcating such business principles into the minds of the young under their influence. This real fact of experience is rarely taken into account when business men ask that business principles be incorporated into the financial activities of the church.

It may be said, then, that the activities of the church should be marked by an alert regard for the present needs of the community and by real effort to supply such needs. Along social lines it should minister freely and wisely, never forgetting that humanity has real, social needs that somehow will be met as long as men and women are social beings. Happy is that church which will so serve the people that cordial good will and fraternity shall characterize the life of that community.

The spirit and influence of the activities of the church should be such as to leave upon the minds of those to whom it ministers an abiding impression that in these things the church is moved not alone nor primarily to seek its own welfare but theirs; that it is not a sponge to absorb but a fountain to give forth. The church that seeks thus to serve the public will soon find enough to engage all its activities of helpfulness and will not lack those who will fly as doves to its windows for such help as shall make for betterment of life here and hope for a life hereafter.
KERRY AND DEXTER CATTLE
By C. S. Plumb
Professor of Animal Husbandry, Ohio State University

For many years there has existed in Ireland two breeds of small cattle. One of them, the Kerry, is black of color, and is purely a dairy breed. The Kerry has been bred in Ireland for a very long time, and nothing definite is known of its origin. It has occupied an important place in the farm economy of south-west Ireland, where it is found in largest numbers today. Probably no breed of cattle has been bred under such conditions of poverty as this, and it is doubtful if any other can thrive on such meagre rations as this one of Irish production. The other, known as the Dexter, frequently called Dexter-Kerry, is usually black, though red is not uncommon. This is one of the smallest breeds of cattle known. This breed is said to have originated in Ireland through the efforts of a Mr. Dexter, who developed it through selection. Claims have also been made that the Dexter is the result of a cross of Kerry bulls on Shorthorn cows, but there is no good authority for this statement.

While the Kerry is essentially a dairy breed, the Dexter is adapted to both milk and beef production. The Kerry bull should not weigh over one thousand pounds and nine hundred is the limit on standard size of mature cows. The Dexter averages about one hundred pounds lighter in weight for both bulls and cows. The tendency is to produce a small class of Dexters, and some very beautiful females weigh right around five hundred pounds. At the shows, one may see many Dexters that do not stand higher than forty inches.

The usual question of a man inquiring about a little known breed is one of profit. Does this or that breed pay? These Irish breeds are but little known in America, yet specimens reached our shores many years ago. In 1859 five two year old Kerry heifers and a bull were imported for Arthur W. Austin at West Roxbury, Mass. These, it is claimed were the first to be exhibited in America, and at the time they attracted much attention in Massachusetts. They were excellent.
The producers of milk and very hardy. At intervals since then, both Kerry and Dexter cattle have been brought to this country in a very small way. Recently, however, there has been a great increase in interest, and quite a number of cattle have been imported. This resulted in the organization in 1911 of the American Kerry and Dexter Cattle Club, with headquarters at Columbus, Ohio. There are also associations representing these breeds in both England and Ireland.

The milk producing capacity of the Kerry is very good, when one considers the size of the cows and cost of keep. There are various records of cows producing 5000 pounds or more a year, the best record within my knowledge being made by Babraham Belle, in England at the famous Babraham Farm of Mr. C. R. W. Adeane. This cow produced 1220 gallons of milk, or about 10,000 pounds. Kerry milk tests about 4.25 per cent fat, an excellent grade. Professor James Long, a noted English agricultural authority, has called attention to the producing capacity of the breed, and has especially emphasized the improvement made in this respect.

The Dexter is an interesting little breed, and many of the cows have remarkable udders. At the last National Dairy Show, Mr. Marsh, the noted Guernsey breeder of Iowa, spent some time with the writer, looking over the Dexter cows exhibited there by Howard Vanderbilt and the Elmendorf Farm, and was much impressed with the udder and milk vein development. Mr. Gould has had very interesting records made in his herd, one Dexter cow yielding in 1910 a total of 8268 pounds of milk. Mr. Robertson of Ireland recently sent me a photograph of a Dexter cow that was making 22 quarts of milk daily, which is a good size yield for a cow of 1200 pounds. This little Dexter cow stood just about 36 inches high, estimating by the height of a man alongside. I think such a producer must yield milk and butter fat at a minimum cost.
In recent years the Dexter has been made much of by people of means. Wealthy men in different parts of the country have established herds, and are breeding them in a serious way. There is one herd of about 200 head of Kerries and Dexters already in the country, most of which are imported. There are also several herds of from 25 to 40, and a number of smaller ones. Are these breeds to be reckoned with seriously in the future? Probably not in a large way. Yet it seems to me that there will be a constantly increasing demand for them, on the basis that, for the cost of keep they will yield a maximum quantity of better than average milk at a minimum cost. If one were interested in having a breed that would attract much attention and yield profit from an advertising point of view it would be difficult to select anything equal to the Dexter. These little cattle at once appeal to the lover of animals, and they become prime favorites with women and children. If one wishes to keep a small cow in town, nothing will equal a good Dexter or Kerry for this purpose. They occupy small space, thrive on an inexpensive ration, and are easily handled by the young folks. One interesting field for the breeder, would be to produce these cattle for this special home purpose. They are not expensive, and can be purchased at very reasonable prices.

A SUMMER IN THE WEST

By H. G. Honeywell, '13

LAST spring, five Cornell students conceived the idea of "doing" the great wheat belt of the United States. They sent letters to state employment bureaus and commission bureaus in the effort to line up a full summer's work in the wheat as it ripened from Kansas to Canada. They laid and carried out plans to be in the wheat belt of western Kansas ready for work on June 20th. Four days were spent on the journey, one at Buffalo, one at Chicago, chiefly in the stock yards and the great packing houses of Swift & Co., and Armour & Co. From the Kansas State employment Bureau they learned that the Southwest had had three weeks of very dry, hot weather which had burned the wheat crop so that much of it would never be harvested. All the men who had come to help in the two states where work was ordinarily plentifulful had thronged into this belt looking for work. Harvest was well under way.

Against the advice of the employment bureaus the intrepid students took their chances and went to Belpre. There they found more men than
110° in the shade but where the work was going on it was above 120°.

By Saturday two of the students were "burned out" and started for Kansas City. The other three all on different ranches stayed a little more than a week longer, then thinking they would like a thrasher's job, took observation lessons for a few days after which they willingly left the country for the North.

First they came to Kansas City but stopped only to get an outside view of the block outside the Union Depot notorious as having a greater number of saloons than any other one block in America, every saloon has its street crier. From Kansas City they went up the Missouri River Valley to Omaha, then to Sioux City. This strip of country three hundred miles long and about five miles wide is for the most part a continuous field of gigantic corn, broken into by an occasional wheat field, or pasture triple in size to what we Easterners are used to seeing. Not being early enough for harvest in the vicinity of Sioux City, for the drought had affected all of the middle west as far north as Fargo, North Dakota, they went on to Sioux Falls, Granite Falls and then to Hazel Run where they worked six days. To make sure of being in wheat at the next stop they headed for Grand Forks, N. D. There was grain to be sure but it was not ripe. Here a former instructor in the Cornell Farm Mechanics Department, then attending the fair at Grand Forks came to their aid, obtaining for them jobs of leading Galloway cattle at the fair from a stockman to whom they afterward hired for a month. Part of the month was spent in harvesting and threshing and the remainder in waiting for it to stop raining. On September third they started east by way of Duluth and by boat through the Great Lakes landing in Buffalo with tougher feet and fifty cents gain as their summer wages.

In the meanwhile, to the two students who had come to Kansas City first, the western adventure looked rather gloomy. They spent two days hunting any kind of work, then one worked in a city dairy and the other weeded garden, but neither job lasted long. From the dairy the writer went to Swift & Company's packing house yards starting as cart driver collecting meat racks, and in three weeks he had a sample of nearly all the duties a driver is called upon to perform in the plant.

Soon the three remaining members of the party, being unable to find work, started for St. Louis. But work in St. Louis was scarce and pay day was always a week away. Turning to the East their next problem was to reach home. Now having become expert travelers, four days' time and the expenditure of a very small sum of money brought them to Indianapolis. Here they were met by eastern capital and soon reached home none the richer but truly wiser.

On the 13th day of July the writer started north alone through the Missouri Valley bound for Minneapolis, but in no hurry, traveling only in the day time and but few hours a day. Stopping for a day each, at Omaha, Sioux City and Sioux Falls, and looking for work, but a job could scarcely be bought. Then after a week's traveling he stopped at Minneapolis with only 23 cents in his pockets. Here the sky was clear and work plenty. Since vacation was growing short it was necessary to move homeward. Accordingly in the middle of September this trip was completed and a net profit of ten dollars realized for the summer.

Anyone contemplating a trip through the United States wheat belt will see by the preceding that it is best to have a well established correspondence with a base of finance, as things do not at all times work for the apparent good of man. Yet if you will ask any of these fellows whether they consider such a trip worth the while you will get a decided answer in the affirmative.
EXPERIENCE ON THE FARM

By E. S. Guthrie
Instructor in Dairy Industry, Cornell University

There are certain essentials necessary for the success of a manager; among which are character, knowledge of the business, and ability to manage men.

The second named essential naturally must be mentioned as a requisite of the leader in any business. This is the one to which the writer shall confine his attention.

It cannot be expected that a farm manager, who has never harnessed nor cared for a horse in any way could command the respect and confidence of his teamster. The herdsman expects his superior to know cattle. This leader of the work on the farm should have had sufficient work with a team to know when it is being carefully cared for and when it is doing a full day’s work. Likewise he should appreciate careful work on the part of the herdsman. Similar knowledge regarding other details of the business must be known by experience.

The question may well be asked, when should a man get experience on the farm and the necessary acquaintance with farm methods? It would seem that the proper time for obtaining such knowledge should be before a student has entered college or at least not later than the first summer after entrance. It is very necessary in most of the courses that have relation directly to work on the farm that the student know the difference between a brow band and a ham string, a reach and a neck-yoke, an end-gate and a side-board. It is to say the least embarrassing, for a graduate of a College of Agriculture to have to learn from the farm laborer things that are being taught to boys in knee breeches. But whether a graduate or a freshman or a younger in short trousers the common things on the farm and in farm life must be learned before a person can properly manage a farm.

The advantages that a farm trained boy has over the one who has not worked and lived on the farm are many. It is unfortunate in our College of Agriculture that our farm boys cannot use their training to count toward entrance. In this our city boys who have had access to good schools have had the advantage. But there is one thing which the writer fully believes should be done which would not be an injustice to the boy who has not been on the farm, and which would help to make our teaching better and the results far more satisfactory, i.e.; demand for entrance to our College of Agriculture to the courses leading to work on the farm that a man be farm born and raised or have the experience of two full year’s work on a farm after the age of sixteen. If the city boy has difficulty in finding a desirable farmer with whom to work let him pay that farmer tuition for a short time until he learns how to labor on the farm. It is no more than the farm boy is doing when he goes to school, for at present he is often compelled to stand the expense of one to three years and often more in training himself in the city for our entrance requirements.

Some of the readers may wonder why the writer is not advising students in dairying to work in creameries, cheese factories, etc., before becoming students of agriculture in the Department of Dairy Industry. If such is the case the reader does not appreciate that the largest percentage of the difficulties of managing a dairy product manufacturing plant comes from the farms. It is absolutely necessary for the successful management of a dairy plant that depends on the farmer for the raw product that a man become acquainted with farm methods by getting actually in touch with them.
The University Trustees, at a recent meeting, approved the recommendation of the Faculty of Agriculture and of the University Faculty to grant hereafter the degree of Bachelor of Science instead of Bachelor of Science in Agriculture for the completion of the agricultural course. Graduates of the college this year were allowed to choose either the degree of Bachelor of Science in Agriculture or that of Bachelor of Science. The popularity of the change of degrees is indicated by the fact that 77 of the 85 graduates favored the shorter degree. For some time it has been felt that this change would be desirable. The agricultural course is primarily a scientific course rather than a professional or technical course. Moreover, the degree of Bachelor of Science in Agriculture does not fit landscape art, forestry, home economics and certain other of our courses.

The Trustees also established the degree of Master in Forestry. This degree will be conferred upon students who have completed five years of forestry study in the College of Agriculture and the Graduate School. In addition to the establishment of these degrees, it was decided that a Master's degree, the exact title of which is not yet settled, should be given for the completion of five years of work in the department of landscape art.

Dean Bailey sailed for Europe on May 21, where he will enjoy two months of much needed rest. While abroad he expects to make a study of European agriculture and of country-life movements. He carries with him the best wishes of The
COUNTRYMAN and the student body for a pleasant and prosperous sojourn.

One of the greatest, if not the greatest, problem that confronts the College of Agriculture today, is how to make the agricultural public place confidence in its graduates. The average farmer has little faith in the college man; as an example of this, one of the departments of the college sent out a circular letter to farmers throughout the state, regarding student help for the summer. Of the few that took the trouble to answer, the great majority showed only too plainly that they had little regard for the ability of college students on the farm. The students themselves are to a considerable extent responsible for this condition. A large number have taken positions where they have been unable or unwilling to do the work expected of them. They have lacked the sense of responsibility to their employers, the college, and themselves.

On the other hand, several fruit-growers in the central part of the state, who employed students during the winter and spring vacations, were more than pleased with both the quantity and quality of the work they did. Indeed, this has been the experience of a great number of farmers throughout the state. Those students who are working this summer to gain agricultural experience, will have an opportunity to greatly influence the opinion of farmers in regard to the value of student services on the farm. No one should do anything that will reflect discredit to the Alma Mater, and everyone should work for others as hard, if not harder, than he would for himself. In this way only, can he ever hope to be of fullest service to the community.

A New Type of Farm Train

In order to afford those persons wishing further opportunity to study given farm problems adequate instruction with necessary teaching material at hand, the traveling school of agriculture has been introduced as an outgrowth of the farm train idea. As will be recalled, the typical farm train of former years made a hurried tour through a given section of the country, stopping only a half hour or an hour in a place. In this brief time a few short talks or lectures were given to arouse the interests of the people to ways of self-help. The farm train has served its purpose admirably; it has called the attention of farmers throughout the state and other states to the work which is being done along agricultural lines in the colleges and in experimental stations.

The traveling extension school is a distinct step in advance of the farm train in that the effort is made to carry actual teaching direct to the people on the farms. With this end in view, railroad passenger cars are equipped with tables, chairs, microscopes and laboratory materials so that a short course of study may be carried on in the school. Instead of stops of an hour or less in a town, classes of twenty-five to fifty persons in each car are instructed for a course extending over a day or several days as arranged. This gives an opportunity for instruction in subjects which require special demonstration material and a considerable period of time for proper presentation. Thus far the College of Agriculture has conducted two such
schools and has found them eminently successful. The establishment of these traveling schools marks the beginning of a newer and broader field of agricultural extension work.

At the last Assembly, Dean Bailey expressed the sentiment that the Assembly was no longer filling a real need in the college, and that its abolishment might be advisable. However, we feel that the sentiment of the student body will strongly oppose the discontinuance of these monthly gatherings of students and faculty which have come to be traditional in the College of Agriculture. These Assemblies are in the first place instructive and inspiring, and in this they fulfill a direct need. We come here not only to acquire technical knowledge but also to obtain a broad university education along agricultural lines. Where is there a better opportunity to learn of the movements being put forward for the betterment of country life than in these monthly meetings? Furthermore, an evening spent at an Assembly is highly refreshing to the student and carries his mind from the problems of the class-room to the broader aspects of agriculture. But the greatest argument in favor of the assembly is that it affords an informal meeting place where all the students may mingle on common grounds. We sincerely believe that the Assemblies in filling these needs are of direct and definite service to both students and faculty.

Seniors—The Senior Class pictures are now ready for you at the photographers.

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| 71 | 4 Embelton, H. |
| 72 | 77 Emmons, C. E. |
| 73 | 56 Faure, J. C. |
| 74 | 82 Fors, A. |
| 75 | 88 Pugett, J. R. |
| 76 | 14 Georgeson, V. L. |
| 77 | 95 Goodman, A. M. |
| 78 | 75 Grenier, T. J. H. |
| 79 | 73 Guilin, P. R. |
| 80 | 7 Hamilton, G. H. |
| 81 | 15 Hampton, R. H. |
| 82 | 91 Hardenburg, E. V. |
| 83 | 86 Haselton, Wm. D. |
| 84 | 87 Hausle, J. P. |
| 85 | 50 Hook, W. H. |
| 86 | 67 Hunn, Anna E. |
| 87 | 90 Hunt, Theo. M. |
| 88 | 22 Ihe, W. C. |
| 89 | 96 Knapp, H. B. |
| 90 | 23 Knibloe, W. E. |
| 91 | 39 Kraker, J. L. |
| 92 | 101 Ladd, C. E. |
| 93 | 25 Lacy, F. H. |
| 94 | 78 Law, J. |
| 95 | 60 Lefferts, R. S. |
| 96 | 26 Lewis, E. T. |
| 97 | 71 Markell, E. L. |
| 98 | 42 Maxon, E. T. |
| 99 | 9 McCloskey, J. B. |
| 100 | 41 McFarland, T. |
| 101 | 98 Mendoza, J. P. Jr. |
| 102 | 29 Mitchell, C. E. |
| 103 | 38 Munger, H. B. |
| 104 | 6 Nanz, R. S. |
| 105 | 80 Newlander, C. E. |
| 106 | 2 Otis, J. C. |
| 107 | 62 Pearson, F. A. |
| 108 | 100 Peck, Gilbert W. |
| 109 | 93 Peterson, E. W. |
| 110 | 56 Polhemus, L. H. |
| 111 | 57 Pritchard, L. C. |
| 112 | 85 Rappleye, W. S. |
| 113 | 32 Rockefeller, V. H. |
| 114 | 10 Rockwell, K. D. |
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| 117 | 68 Sandell, H. C. |
| 118 | 74 Selecter, I. |
| 119 | 40 Smith, E. P. |
| 120 | 43 Smith, F. A. C. |
| 121 | 64 Smith, O. W. |
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| 123 | 16 Sprague, Theo. |
| 124 | 45 Stark, P. C. |
| 125 | 92 Stevenson, S. H. |
| 126 | 8 Stimson, S. N. |
| 127 | 34 Strahan, J. L. |
| 128 | 97 Stow, W. K. |
| 129 | 37 Switzer, H. B. |
| 130 | 24 Temple, C. R. |
| 131 | 27 Tenney, F. A. |
| 132 | 55 Tilbury, M. Ruth |
| 133 | 49 Tsou, V. H. |
| 134 | 61 Tyson, B. |
| 135 | 17 VanBuren, H. L. |
| 136 | 36 VanKleek, J. R. |
| 137 | 18 Ward, D. D. |
| 138 | 76 Washburn, R. S. |
| 139 | 83 White, A. H. |
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| 141 | 72 White, S. H. |
| 142 | 21 Whitney, N. J. |
| 143 | 94 Wilson, W. R. |
| 144 | 53 Wooster, C. G. |
CAMPUS NOTES

The last assembly of the year was held on May 16th. After selections by the Glee Club and Albert Horner, Jr., Dean Bailey spoke in part as follows: "When you who are Seniors leave college, you must not stop growing. The world is full of dead people who are still living. Have an enthusiasm for life, not a fidgety enthusiasm but a quiet enthusiasm which accomplishes results. Do not be too impatient for worldly goods. The great end of education is to produce scholars and to improve the human species.

"Materially our college has prospered during the past year. The registration has been 1,556 and we will probably register 250 in the summer school. There are now 34 or 35 full professorships. The college has now nine buildings in the course of construction. I do not mean that we ought to be satisfied with material development.

"Everything people do can be put in an educational form and this form should always be subject to change. I am wondering whether agricultural education when it is solidified will not be challenged. Learning counts for little unless it is adapted to life. Religion and education have always been conservative. The man who advocates the new is called a heretic lacking in faith and culture. Culture covers many sins. Can we not develop culture in agricultural education if the subjects are taught as they should be?

"Success in agricultural education depends on motive and motion. It depends on the spirit which comes out of the organization, the subject matter, the executive control and the laboratory effectiveness. But unless agricultural education is threaded with the spirit of service it cannot be the means of great benefit to the human race."

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The following appointments have been made in the College of Agriculture:

L. J. Cross, Assistant Professor in the Department of Agricultural Chemistry; W. A. Riley, Professor of Insect Morphology and Parasitology; G. W. Herrick, Professor of Economic Entomology; Robert Matheson, Assistant Professor of Biology; G. C. Embody, Assistant Professor of Agriculture; M. J. Prucha, Instructor in Plant Physiology; G. R. Hill, Jr., Instructor in Plant Physiology; Chas. Gregory, Instructor in Plant Pathology; C. P. Smith, Instructor in Plant Pathology; I. T. Francis, Assistant in Plant Pathology; Charles Chupp, Assistant in Plant Pathology; R. Y. Winters, Instructor in Plant Breeding; J. A. Bizzell, Professor in Soil Technology; H. O. Buckman, Instructor in Soil Technology; L. H. Moulton, Superintendent of Farms; K. C. Livermore, Assistant Professor of Farm Management; A. L. Thompson, Instructor and Investigator in Farm Management; C. E. Ladd, Instructor in Farm Management; T. E. Schreiner, Assistant in Poultry; H. E. Ross, Professor in Dairy Industry; H. C. Troy, Professor in Dairy Industry. H. M. Pickerill, Instructor in Dairy
Industry; T. J. McInerney, Instructor in Dairy Industry; Clara Browning, Instructor in Home Economics; Mrs. Bessie E. Austin, Clerk and Assistant; H. W. Riley, Professor of Farm Mechanics; E. D. Montillon, Assistant in Rural Art; E. M. Tuttle, Instructor in Rural Education; R. H. Wheeler, Assistant Professor in Extension Teaching; Royal Gilkey, Instructor and Supervisor in Extension Teaching.

Student Assistants in Entomology, Biology, and Nature-Study:


**The Summer School of 1912** will begin July 8 and close August 16. Its purpose is to train persons who desire to teach agriculture, including nature-study and home economics, in the public schools. Last summer instruction was given in three distinct groups of subjects, in any one of which the student could spend all of his time: (1) Agriculture, including instruction in soils, agricultural chemistry, farm crops, animal husbandry, dairy industry, poultry husbandry, pomology, farm management, entomology, plant pathology, and meteorology. (2) Nature-Study and Elementary Agriculture, embracing a study of the history, development, and pedagogies of the nature-study idea; school gardens; field trips; 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. (3) Home Economics, covering the general subject of foods, human nutrition, principles of household economy, and household sanitation.

This summer the courses will be extended in scope and a number of classes will be offered, which carry university credit. They will be equivalent to introductory courses given by the regular departments during the year. Professor V. MacCaughey, of the Botany Department of the University of Hawaii, located at Honolulu, will be here to assist in the Rural Education course.

Professor Stocking addressed the Bedford Farmers’ Club, Bedford Station, May 22, on “The Production of Milk from the Standpoint of the Producer and Consumer.”

Dean Bailey is rewriting and revising his “Cyclopedia of American Horticulture.” The new Cyclopaedia will be out in 1914.

Professor C. O. DuBois, in charge of Field Crops and Farm Management at the State School of Agriculture, at Alfred University, is taking special work in the university for the rest of the term.

There will be a number of changes in the required schedules of freshmen work for next year. Four high school units in Agriculture will be accepted for entrance. Solid Geometry and Plane Trigonometry will be required at entrance of students entering for Forestry and Rural Art. Botany will be a sophomore subject to be taught in the College of Agriculture. Zoology will be an alternate choice with Botany. Only one term of Geology I, three hours, will be required. Physics 5 and 10 will be electives for students entering next fall. A new course, entitled “The Farm” is to be required of freshmen. It will be given the first term and count two hours.

The Frigga Fylge have enjoyed a number of social activities during the past two months. On April 16th, a reception was given to the freshmen girls of the College of Agriculture by this Club. Mrs. H. B. Young spoke of the duties of the girls to their college, and ways in which they might be useful in and through their organization. This was followed by a social programme, efficiently carried out by Miss Jean Rundio, after which refreshments were served up by the
committee. The “feed” included a box of apples reserved from the Athletic Rally.

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On May 7, an entertainment was given in Sibley Dome by Miss Jeanette T. Broomell, reader and impersonator, assisted by Miss Gertrude Nye, of Ithaca Conservatory of Music, for the benefit of the Frigga Fylge Scholarship Fund. This scholarship of $50 was started in 1911 and is given on the same basis as other scholarships in the College of Agriculture. One of the active members of the Frigga Fylge earned the scholarship this year. The fund was first started by an entertainment given by Seumas McManus last year. The profits of last years’ entertainment amounted to $90, and was increased to $125 by donations.

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Professor C. G. Woodberry, head of the Department of Horticulture at Purdue University, spoke last month before the students in Pomology, comparing the possibilities for fruit growing in the east and west.

* * *

The Pomology Department has just concluded planting about 20 acres of land to peaches, plums, cherries and grapes.

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H. B. Knapp, ’12, has recently been appointed Instructor in Pomology for the coming year.

A new division is to be created in the Department of Pomology, with the appointment of a professor of Research Pomology, who will have charge of investigations and research, along the lines of interest to this department. Part of this work will be the collection of fruits and varieties for a practical experimental plot.

* * *

The Department of Pomology is carrying on an extensive investigation on a peach farm near Brockport. Effort will be made to determine the effect irrigation has on yield, flavor and keeping quality.

The regular monthly meeting of the Ag. sophomore class was held April 22. The class voted $20 toward cancelling the debt for the Ag. gig. Professor Rice of the Poultry Department gave a very interesting and instructive talk on the past history of the Agricultural College, illustrating its development.
with lantern slides. A violin solo and a social hour consisting of music and an ice cream "feed" concluded the evening’s program.

Prof. Riley, as president, is perfecting plans for the annual Standardization Congress of the American Society of Agricultural Engineers, to be held next December. This society is composed of about sixty members, two-thirds of whom are professors in agricultural colleges and one-third manufacturers. An attempt will be made to get manufacturers together to start a work of standardizing agricultural machinery. Such topics will be discussed as the standardizing of types of farm wagons, sizes of wheels, etc., so as to eliminate the number of wagon specifications which the manufacturers must carry. At this Congress, the constitution will be revised and a campaign for increased membership will be begun.

An exhibition of paintings and bronzes was held under the auspices of the Rural Art Department. Works of Antonio Barone, of New York, Miss Alice Platt, of New York, and Miss Beals and Miss Sackett of Buffalo were among those on exhibition. There were also several old English and Spanish paintings.

The following men have been elected to Hebs-Sa, an honorary society of the College of Agriculture:


A very interesting collection of knives from all parts of the world has been placed in the hall of the main building by Dean Bailey.

Dr. Dugger has been elected Research Professor of Plant Physiology of the Shaw Botanical Gardens, St. Louis, Mo. He will take with him Instructor Hill and Mr. Bobbins, a graduate student in that Department.

Prof. J. H. Comstock has been appointed by the trustees to represent the University at the celebration of the two hundred and fiftieth anniversary of the founding of the Royal Society of England, this summer. He is also a delegate of the Entomological Society of America to the meetings of the International Congress of Entomology, to be held at Oxford.

The Department of Soils has entered into arrangements for two industrial experiments. One with the Du Pont Powder Company for the study of dynamite and its relations to agriculture, another with the Wyoming Valley Truck Farm Company for the development of a 200 acre muck farm for truck gardening purposes.

T. M. Morrison, ’11, assistant in the Soils Department is preparing a soil map of the University Farms.

Soil survey work during the present season will be carried on in two counties; in Orange County under G. A. Crabb assisted by T. M. Morrison, and in Oneida County under M. E. Carr assisted by E. T. Maxon, ’12. Mr. Morrison, who passed the civil service examinations for soil survey work, has received an appointment from the bureau of soils, which has been deferred until Nov. 1, in order that he may give the summer to work in New York state.

The last year’s legislature made a special appropriation of $1000 for the investigation of gladiolus diseases. The past legislature has just made an additional appropriation of $2000 for the investigations during the coming year. This work is to be conducted by the Department of Plant Pathology. L. M. Massey, a graduate student of Wabash College, Indiana, has been
appointed as special assistant to conduct this investigation and began work on April 1. The work during the growing season will be conducted in a field laboratory at Berlin, New York, on the farm of A. E. Cowee, the largest gladiolus grower in the United States. At this place extensive experiments will be carried on.

* * *

Mr. J. T. Francis, '12, has been appointed assistant in Forest Pathology and next year the Department will offer special courses in Dendro-pathology. This course will be in charge of Mr. W. H. Rankine who has been recently appointed Forest Pathologist for the State Conservation commission with headquarters at the College of Agriculture.

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The Ag. Mandolin and Glee Clubs have just completed an unusually successful year. Under the directorship of F. A. C. Smith, the Mandolin Club has progressed very rapidly, performing exceptionally well on many occasions. The Glee Club, with G. W. Peck directing the first term, and C. W. Whitney the second, also are to be congratulated for the excellent work they have accomplished.

In March, their annual smoker was held in the students' lounging room. Besides clever "stunts" by several of the members, the programme included very interesting talks by Prof. Bentley and by Mr. E. S. Guthrie. At the election held during the meeting, C. W. Barker was chosen president, E. J. Hoffman, vice-president, L. C. Treman, manager, and R. C. Shoemaker, assistant manager.

* * *

Helios, an honorary society of the College of Agriculture organized last fall, has announced the following elections from the junior class: C. W. Bame, of Auburn; L. K. Chapman, of Auburn; A. C. Fraser, of Buffalo; M. B. Goff, Sturgeon Bay, Wis.; G. W. Lamb, of Hubbardsville; E. G. Lawson, of Buffalo.

* * *

Professor A. H. Gilbert will be at the head of the Chautauqua School of Practical Agriculture, which will be held from June 21st to August 30th. He will be assisted by Mr. R. E. Deuel of the Animal Husbandry Department and H. B. Rogers, '12. The school is designed for men who desire practical farming experience. The farm has 115 acres which are devoted to live stock, orchards, field crops and flowers. The men will live in tents. An arrangement has been made with the Farm Practice Department so that they can secure credit toward the farm practice requirements.

* * *

At the last meeting of the year of the Agricultural Association, the officers for the first term of 1912–13 were elected: President, C. W. Whitney; vice-president, E. A. Brown; secretary, Miss G. C. Bristol; treasurer, B. P. Jones; member at large of Executive Committee, H. G. Honeywell; athletic director and member of Athletic Council, N. D. Steve.

* * *

The following officers of the Agricultural Sophomore class were elected for the first term of 1912–1913: President, J. Judson Swift; vice-president, Miss L. C. Fish; secretary, F. H. Branch; treasurer, H. C. Stephenson; member at large of executive committee, R. H. Cross.
Milton Pratt Jones, son of Milton Trafton and Mary Smith Jones of Deerfield, N. Y., died at Saranac Lake, May 2, 1912, thirty-six hours after his mother, who had been attending him, had passed away. The double funeral was held at Forest Hill Cemetery, Utica, on May 4th.

Mr. Jones was born on the old family farm at Deerfield July 25, 1886. Graduating from Utica Free Academy in 1904 as an honor pupil, he entered the College of Agriculture with the class of 1908. From his freshman year he took an active part in student affairs, serving on many committees and leading in many student movements. As a recognition of his leadership he was elected to the senior honorary societies of the University and of the College of Agriculture. In his senior year he was president of the Agricultural Association, vice-president of the University Christian Association, and business manager of the Cornell Countryman. He was a member of Alpha Zeta fraternity.

During his last year as an undergraduate Mr. Jones served as an assistant in the extension department, and on graduation was appointed to an instructorship. In this capacity he became well known to country boys and girls throughout the state, through his letters in the Rural School Leaflet. It was on July 17, 1909, when representing the college in the summer school at Chautauqua that he was stricken. In May, 1910, he went to Saranac Lake accompanied by his mother, who there spent her life for her son in his unsuccessful struggle to regain health.

To an unusual degree Mr. Jones' frank honesty, enthusiasm, and untiring devotion to the things in which he was engaged, endeared him to his associates. The Countryman pays tribute to his name for his personal worth and for his faithful and invaluable service.

'94. B. S. A.—R. A. Pearson has been elected to the presidency of the Iowa State College of Agriculture at Ames, Iowa. He has been granted leave of absence for the summer and will visit several agricultural colleges in Europe.

'98, Sp.—Theron S. Dean is General agent for Vermont of the Mutual Benefit Life Insurance Company of Newark, New Jersey. His present address is 401 South Union St., Burlington, Vermont.

'01, W. A.—Harry B. Winters has been appointed first assistant of agriculture in the New York State Department of Agriculture, to succeed C. S. Flanders who is now counsel for the Department of Agriculture. Mr. Winters is a native of Tioga County and was educated at Phillips and at Andover. For thirteen years he was manager of the Winters Farm at Smithboro and later became general manager of the largest certified milk farm in the world. He came to the Department of Agriculture in February, 1911, as inspector of farms connected with state institutions. He is president of the New York State Breeders Association, treasurer of the N. Y. Agricultural Society, and director
of the Certified Milk Producers Association of America. Mr. Winters was at the College on May 11, as one of the regular visitors invited here by the Extension Department.

'02, Sp.—C. C. Cole is now an assistant agent connected with the New York State Agricultural Department. Mr. Cole was formerly manager of the J. B. Taylor Greystone Farms at Watertown, N. Y., but has managed his own farm for several years previous to the accepting of his present position.

'04, Ph.D.—Dr. F. W. Foxworthy has been transferred from the Philippine Bureau of Science to the Bureau of Forestry, and is stationed at the University of the Philippines at Los Banos. Half of his time is given to instruction in Forestry and one-half to research.

'04, B. S. A.—Norwood R. Shields recently Director of Agriculture at St. Paul’s Normal School, Lawrenceville, Va., has bought a farm and settled down at Hagaman, N. Y.

'04, B. S. A.—P. J. Van Toben Sels is manager of a 4500 acre ranch in Sacramento County, Cal., consisting of reclaimed bottom land. Mr. Sels is also trustee and secretary of the entire reclaimed district. He writes of very interesting work in connection with this tract which is at times twenty-five to thirty feet below the water level, resulting in some excellent agricultural lands.

'05, M. S. A.—R. S. Woglum—Announcement has been made of Mr. Woglum’s marriage to Miss Mabel Clayton, April 10, at Washington, D. C.

'05, B. S. A.—E. G. McCloskey is visiting with his wife in Ithaca for a few days. Mr. McCloskey is shortly to go to Philopolis, Maryland, where he will take a position as instructor in Agriculture in the Philopolis High School.

'06, Sp.—F. H. Cardozo is Director of Agriculture and Horticulture at the Florida Agricultural and Mechanical College for Negroes at Tallahassee, Florida.

'H. O. Tiffany has been appointed Manager of the State Institute Farms at Dayton, Ohio.

'07, B. S. A., '08, M. S.—Norman Grubb. A mistake occurred in the April issue in which it was stated that Mr. Grubb was still connected with the Forest Service, Department of the Interior. In correction we would say that Mr. Grubb has been engaged as horticulturist in work under Dr. W. W. Tracy, Sr. in the Bureau of Plant Breeding Industry for some time.

'07, B. S. A.—F. S. Hayden is looking after the orchard end of his home farm. He is making a specialty of box packed fruit. Mr. Hayden spent several years in the study of the fruit business in the western states.

'07, Sp.—Solomon Rosenbaum is manager of the Threear Farm, Amenia, Dutchess County, N. Y.

'08, B. S. A.—Eroy H. Anderson is secretary of the Bedford Farmer’s Cooperative Association of Bedford Hills, N. Y. His address is Katonah, N. Y.

'08, B. S. A.—L. A. Toan is teaching Agriculture in the Perry High School and is supervising the work of his farms in his spare time.

'08, Sp.—L. F. Strickland is with the New York State Department of Agriculture, Bureau of Horticulture. Mr. Strickland is in charge of the nursery and orchard work in Niagara, Erie, Wyoming, and Genesee counties. Cooperation experiments in conjunction with the New York Agricultural Experiment Station were conducted during the season of 1911 against the Pear Psylla. Aside from the regular work these are expected to be continued during the season of 1912 and will be extended against several other fruit pests also. Mr. Strickland is secretary of the Lockport Grange No. 1262. His address is Lockport, N. Y.

'09, A. B.—J. S. Lloyd, assistant in Biology is now in South America with a collecting party from the American Museum of Natural History of N. Y. When last heard from he and Arthur Allen of the Zoology Department were planning to follow the Amazon River.
from source to mouth; a part of the journey will be through unexplored territory.

'09, B. S. A.—Chester C. Neal, who has been successfully conducting a laboratory at 3038 Chestnut Street, Philadelphia, was recently appointed chemist and bacteriologist to the Independent Milk Dealers’ Association of Philadelphia.

'09, W. D.—John P. Porteous is in charge of the laboratory testing and commercial dairy work at the State School of Agriculture, Canton, N. Y.

'10, B. S. A.—Mr. H. C. Wheaton has been appointed manager of the farms of the Commonwealth Water and Light Company of Passaic, N. J. There are about 100 acres in the farms and of these one-half is a tidal swamp. Mr. Wheaton’s foremost problem will be the drainage and development of the wet land along the Passaic River. An extensive system of levees, canals and under-drainage will be undertaken. Mr. Wheaton was formerly Assistant Agriculturist of the Lehigh Valley Railroad.

'10, W. D.—Robert T. Quick is in charge of a certified milk plant of the Lake Placid Club, Lake Placid, N. Y.

'10, W. D.—James B. Rowe is managing a butter and cheese factory in Vernon, N. Y. Mr. Rowe won both gold and silver medals at the State Fair last fall.

'11, B. S. A.—Isaac Birkhahn Lipman, was married on Saturday, April 6th to Miss Helen Phillips of New York City.

'11, W. D.—Melvin Streeter is with the Chemung Dairy Company, Elmira, N. Y.

'11, Sp.—J. G. Cochrane of Ripley, N. Y., spent a few days in Ithaca recently. Since leaving the University he has assisted in the work at the home farm. On May 15 he took a position as manager of a 50 acre apple and pear orchard at Kisco, N. Y.

'11, Sp.—Samuel Huffston is stationed at New London, Ohio, as Government agent in the timothy breeding nursery. Some 16,000–20,000 plants are being transplanted. Many of these have been already set out.

Ex '11.—Lee J. Talbott, Jr., the former wrestling and hammer throwing champion, writes that he has charge of the Silo Department of the Columbian Steel Tank Co., Kansas City, Mo. His address is 1605 West 12th St., Kansas City. He is as enthusiastic about steel tanks as he used to be about iron hammers.

'12, B. S. A.—The present address of Edward L. Bernays is 120 Produce Exchange, New York City.

'12, B. S. A.—J. S. Briwa has been appointed assistant bacteriologist at the Geneva Experiment Station.

'12, B. S. A.—Wm. D. Haselton is managing a young orchard at Stevensville, Montana.

'12, B. S. A.—Lewis Kraker is managing a farm at Hempstead, L. I. Market gardening, squab raising and fruit growing are receiving special attention.

'12, Sp.—Frank F. Black is leaving now to take charge of the Belvidere Farms, Belvidere, N. Y.

'12, Sp.—F. E. Rogers has accepted a position with the Oswego Fruit Growers Association as Horticultural Advisor to the Fruit Growers of the county.

'12, W. A.—James Rothenberger died May 1st. Mr. Rothenberger was severely kicked by a horse on April 24th. A leg was broken and blood poisoning set in which resulted in his death.

'13, Sp.—J. M. Steitz of Ghent, N. Y. has returned from a 10 months’ trip in the west where he has been working in different localities.

'13 Ex.—Rowland Calkins is now staying at Saranac Lake for his health.

'14, Sp.—Paul Smith is now managing a 400 acre dairy farm near New York City.

'14, Ex.—Daniel E. Smith, who went to Saranac Lake for his health last fall has now recovered and has taken a position with the Newark Sign Works, of Newark, New Jersey.
COMMUNITY BREEDING

The benefits to a large number of men in one locality, where they can work and plan in unison, of adopting the plan whereby a community breeds one breed of stock, and as nearly as possible one family of that breed, and so secures not only uniformity of stock, but also prepotency, is well shown by the success of the Geauga County, Ohio, Holstein Breeders' Association. This association numbers about 150 members, every one of which is breeding—very nearly—the De Kol family, and along, as nearly as possible, close lines of similarity. Bi-monthly these men meet for conference and discussion, formulate sales, and possibly approach something like a "gentleman's agreement," as to numbers to be sold, prices, and the like. This association has made a great reputation for meritorious animals, and buyers come from all parts of the country and literally "clean up" the market, buying every animal that can be purchased.

A milking temperament is always having its upward pull, and it is not strange that when men by this plan come to have dairies where none fall below 10,000 pounds of milk in 12 months, such men can sell ten days old heifer calves at $100 and better each. What these men are doing others can do. This plan is not likely to be overdone, as long as there are 20 million cows outside of purebred dairy breeding, and the population that is asking for finer dairy produce is fast outstripping the cow population that is to supply this demand. The prices of butter and cheese have been continually advancing during the last ten years and probably they will be still higher. Then the men who are owning these fine producing cows will have a great advantage. The man with the common cow may then take time to sum up some of the advantages of community breeding, and lament that once upon a time he, too, might have taken his place in the advance ranks and now owned $500 cows.

COOPERATION OF PRODUCERS AND CONSUMERS

On April 19-20, there met in the Board of Trade and Transportation rooms, in New York City, the representatives of more than twenty associations of producers and consumers. The object of this conference was to formulate plans for bringing the producer and consumer into closer relation and thereby eliminate, if possible, some of the middlemen, through whose hands all products must now go to the consumer. After considerable discussion, in which several points of view of the problem were presented, a committee of five producers and five consumers was appointed to prepare a definite plan for cooperation and to make recommendations. Several recommendations and resolutions were left in the hands of a permanent committee.

* * *

CONDEMNATION CLAIMS ACT

Several hundred farmers and others scattered all through the state were pleased to learn that Governor Dix has approved of the bill appropriating $200,000 for the payment of claims incurred by the state by reason of the condemnation and slaughter of glandered horses and tuberculous cows. Commissioner Huson reported to the Legislature on March 7 that there were then claims on file in his department aggregating $194,000, with no funds to satisfy them. Many of these claims were more than six months old. Commissioner Huson, in anticipation of the signing of the bill, had a number of clerks at work preparing schedules for the payment of these claims, and all properly authenticated claims were satisfied within thirty days.

* * *

PRACTICAL EXTENSION WORK

The excellent results which the business farm management instruction under the direction of the Missouri College of Agriculture has accomplished in Missouri, have been responsi-
ble for the great number of requests for the services of men of that college. Consequently this plan has been adopted as a possible way to reach as large a number of farmers as possible with the instruction that has proved so profitable. The college will place a limited number of trained agricultural men in the counties or localities during the present year. The men who will carry on this work will be known as county administration men, and will be entirely under the direction of the college. They will devote their entire time to giving instruction and advice to the farmers in the communities in which they are employed. The college will pay 25 per cent of each man’s salary, the county or community receiving his services 75 per cent. The location of the few men who will be started this coming year will be determined by the interest shown and support promised by the citizens of the community concerned. Each section of the state will be given an opportunity to ask for the services of one of these men. It is hoped that ultimately every community will employ a county administration man.

* * *

AMERICAN DAIRY PRODUCTS

Statistics gathered at Washington show that the price of butter in this country averages about 50 per cent more to-day than it did ten years ago. The price of milk increased in the same period from 11 cents to 13 cents per gallon. The output of butter only increased 18 per cent, however, from 1904 to 1909 while there was an actual decrease in the output of cheese. It is estimated that the total butter output of the country in 1909 was about 2,000,000,000 pounds. The output of the creameries was 625,000,000 pounds. The remainder came from the churns on the farms. A great transformation has taken place in the butter in thirty years. At that time less than four per cent of the supply was creamery product. By 1909 the percentage had risen to nearly 30. The value of the products of such concerns has increased from $25,750,000 to $274,500,000. The student of the increase in the cost of living finds butter one of the important factors.

* * *

NEW YORK AGRICULTURAL PROSPECTS

The state of New York is in the real estate business to some extent. It will soon have farms for sale. Through the Agricultural Department it has listed and helped to sell over 2,000 unoccupied farms already. A large proportion has gone to western farmers. Since January 1st there have been 2,023 calls for the bulletin describing these farms and of these the Central West sent 574. Canada sent 34 and 10 foreign countries were interested. A western farmer whose land has increased in value to the extent of $150 per acre may sell out, buy twice as much land in New York, buy stock and tools and have a comfortable sum left as a reserve. In New York he can raise, on good land, as much grain or grass as he raised before and get one-third more per unit for it. The thousands who are to locate in New York will need new outfits of tools and supplies and will have the capital to buy them. The country lying from the Ohio river east to the Atlantic is to see in the next 20 years the greatest agricultural development of any section in the country.

BOOK REVIEW

PLANT ANIMALS. A Study in Symbiosis by F. Keeble, Professor of Botany in University College, Reading, England. Published by the Cambridge University Press, represented by G. P. Putnam’s Sons, 2, 4 and 6 West 45th Street, New York City. 157 pages. $4.00 net.

A very scholarly and interesting little book, which enters an important field. Professor Keeble believes that biological principles can be best studied in simpler organisms and his book proves that there is much truth in this theory.
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