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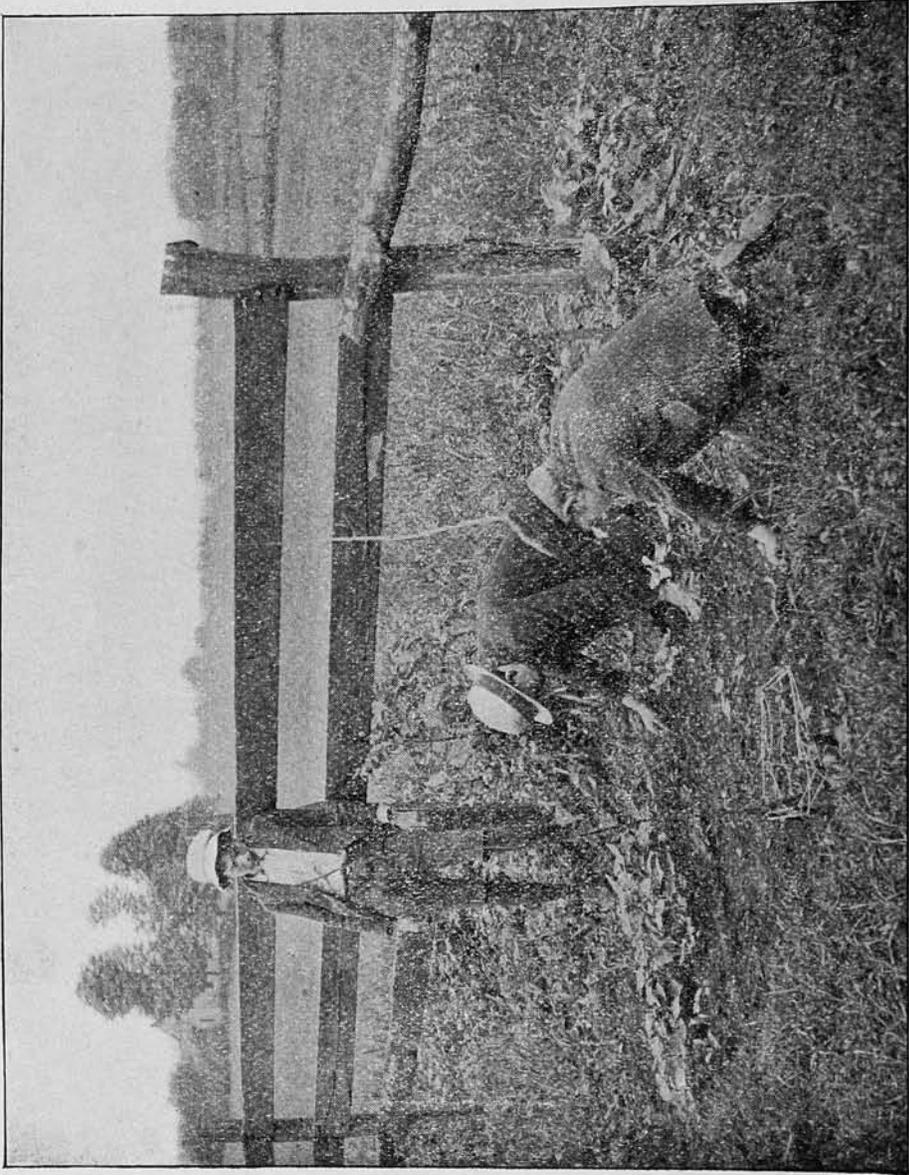
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IS THE SEED COMING UP?

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THE OUTLOOK FOR AGRICULTURAL TEACHING

By L. H. Bailey

The solution of all human problems must come through education. Education, therefore, must reach all the people: how to reach them effectively is the one perennial question. It is clear that the people must be reached by means of the things with which they work and by which they live. We are constantly adding new subjects to our curriculums, thereby reaching more and more persons: at last, every subject with which men engage will be put in pedagogic form and be made means whereby men are educated.

There are probably twenty-five millions of people on the farms in the United States. All these multitudes must be reached. They can be reached, when their own native subjects are made teachable and attractive. These people are interested in their business: we cannot force them, by any educational process, to be attracted by exotic subjects. One by one the professions have been reached by the schools—law, medicine, and the rest. One by one, also, the trades are being reached,—the phenomenal success of the schools of engineering and mechanics attest this fact.

Unless the progress of the race shall cease, all the agricultural trades also will be reached. In due time, everything comes to its own. The farming people are coming.

This, then, is the burden of the new agricultural education—to reach the agricultural people in terms of their daily lives, to the end that their lives may be fuller and stronger. It is sometimes said that the agricultural colleges are unsuccessful. This is an error. We must remember that we are living in a city-making epoch, and at a time when all the mechanic and transportation trades are being developed. It is the tendency of governments to foster these trades. All these movements bring men together. Affairs are syndicated. Along with the other

enterprises, the technical colleges of mechanics have developed. It is and engineering colleges that we misjudge the agricultural colleges. The agricultural trades are legion and they are scattered. The individual investments are small. There are relatively few great organized or syndicated business movements among the agricultural people. The agricultural trades are likely to be the last ones benefitted by governmental politics. Moreover, the real agricultural development of the country has not yet come. We have merely exploited the land—moving on and on when the first flush of fertility has vanished. The development of the country as a whole has been along political and mechanical lines for the most part. When we have skimmed the surface of the whole country with the plow, we shall turn to the old lands to begin a real and fundamental agricultural development.

In all this period of transition and of waiting, the agricultural colleges have been striking at fundamental problems. They have been experimenting with means and methods of teaching. Presently we shall be astonished to discover the extent and the value of the work they have done. Sentiment and custom seem everywhere to have been against the farmer. We cannot overcome the traditions of centuries in a day. It is only a generation of men since agriculture began to take a serious part in educational enterprises, and a generation of men is a short space as measured by the evolution of any great subject. As one considers the history of education, the surprise is that agriculture should have secured even a foothold in the colleges and universities within thirty or forty years, let alone acquiring a standing co-ordinate with many other subjects. Forty years of experimenting have passed. We begin to see the way. The next ten years will see greater progress than the past forty years have seen. Cor-

nell University stands between the old and the new. It holds to all that is good in traditional means of educating, and then it adds thereto, as rapidly as it is able, all the subjects where-by men toil and live. It is its everlasting glory that it should have developed such an institution as Sibley College, thereby raising the mechanic trades to their full importance and dignity in the affairs of men. The great agricultural activities must now have their turn, for in agriculture now lies the greatest special educational field yet to be developed.

Everywhere there is evidence of this new awakening of interest in agriculture. The very growth of the cities sets up a reaction toward the country. With all their tremendous development, the mechanic arts still employ only one-fourth as much fixed capital as agriculture does. The periodical literature seems almost to have an agricultural and country-life flavor. Problems of agricultural education are now engaging the attention of educators and publicists in all walks of life. This is inevitable, because it is by means of such education that the great mass of the out-city people must be reached. What is the educational problem in the South and the West but the problem of reaching the country people? And even in old New York, how are we effectively to reach the one million and more country people except through an educational enterprise that is essentially agricultural? All these persons are citizens; they contribute to the public welfare; they often hold the balance of power; what, then, is the plain duty of the schools?

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It is astonishing what has been the growth of agricultural education enterprise within a few years, slow as it seems to have been. When the Land Grant Act was passed in 1862 it was popularly supposed that one professor of agriculture and one of the mechanic arts would satisfy all requirements. If we choose a contrast from Cornell University, we find that the College of Mechanic Arts now has a staff of 41 persons and the College of Agriculture of 33 persons. In time, every mechanic trade and every agricultural trade will be represented in these institutions. Whether the students attending the colleges of agriculture will ever be as many as those attending the colleges of mechanic arts remains to be seen. The problems of agricultural education are peculiar, and must be solved for themselves, and in their own way. Much of the work must always be the carrying of instruction to the people rather than bringing the people to the instruction. The old academic methods must be very greatly modified. The problems are of a different order from those to which we have been accustomed. But whatever the methods, the results must finally be the solving of one of the greatest remaining problems in democratic education.

THE FARMER'S INSTITUTE MOVEMENT

By F. E. Dawley

Director of Farmers' Institutes for New York

It is probable that no one agency has ever done so much for the advancement of agriculture in America as the establishment of the land grant colleges. These had not been in operation very long, however, before the necessity of more accurate information in relation to agricultural subjects was apparent, and following the land grant college came the experiment station. Comparatively few people availed themselves of the advantages of university agricultural education, and some means of popularizing the work of the experiment station and making available to a larger number of people the immense amount of valuable information which was being obtained seemed needful. To meet this necessity the farmers' institutes were established. At the very first their value was apparent to thinking agriculturists, but they were not so popular as they might have been from the fact that many of the practical farmers stood in awe of the scientific investigator, the college professor and the "book farmer" who came to their meetings, and the attendance was not what was wished. A little unbending on the part of the instructors and their hearers as well aided wonderfully in bringing them together, and at the present day no branch of agricultural instruction is so popular as the institute movement. This is easily attested from the fact that nearly all states have provided in one way or another for the maintenance of farmers' institutes, and the United States government, realizing the necessity of securing more uniform work in all sections and pushing forward this means of instruction in states where it is not already established, have created a division of their bureau of experiment station work, and appointed an officer known as Farmers' Institute Specialist, whose duty it is to inquire into means and methods and report.

Few states are doing as much for

the Bureau of Farmers' Institutes as New York, where \$20,000 is provided yearly and last year 212 institutes were held, something over 160 different speakers were present and addressed audiences aggregating nearly 100,000 people. In a state like New York where the agricultural interests are so varied a wide range of subjects must be covered, which calls for specialists in very many lines at the various meetings, and an intimate knowledge of the agricultural conditions in the various sections of the state in placing them. From attendance at institutes in many other states, I am convinced that on the whole the New York State farmers are as thoroughly advanced in their specialties as any men to be found. It is pretty hard work for a speaker to give the potato specialists of eastern Long Island anything very new in relation to cultural methods, and the man who attempts to speak on apple growing in western New York must remember that many a man in his audience has not only made a success of this branch of horticulture, but has made a competency in following it. In diary sections can be found men who have fed cows and established world's records, and in other parts of the state horsemen who have bred and trained world's record makers. It is the exception to find a farmer in the state who cannot read understandingly matter that is quite technical in the direction in which he is most interested, and our farmers' wives on the average have a better common school education than the average resident of the towns and cities. Even though this is true there is much room for improvement, and to meet the problems which are constantly arising more information is needed.

The farmers' institute endeavor to bring this knowledge practically to the door of the farmer, and by word of mouth to impress upon him the advantage of securing all the light possible



THE FARMERS' WIVES READING COURSE

BY MARTHA VAN RENSSELAER

Supervisor of Farmers' Wives Reading Course

THE AGRICULTURAL EXPERIMENTERS' LEAGUE OF NEW YORK.

By John Craig

There was held on the evening of March 3, 1903, in the Dairy Building, a very important mass meeting of the students of the College of Agriculture. At this meeting there was organized a league "for the purpose of carrying on co-operative experiments in the various departments of farm husbandry; for the promotion of intercourse among those studying farm problems; for the advancement of agricultural education; for the collection and dissemination of data relating to country life, and for the purpose of supporting legislation favorable to the promotion of these objects." There were to be two classes of members, active and associate. The active members are residents of the state of New York who have been connected as students with Cornell University or any other school of agriculture, or those who are engaged professionally in any agricultural investigation. In this way the Experimenters' League had its inception. Primarily, it is an organization of the students of the College of Agriculture for the purpose of fostering a spirit of investigation among farmers. It will be a powerful lever in carrying out agricultural reforms. The work of the League is divided into various branches. Each branch is presided over by a chairman. There are divisions of Field Crops, of Horticulture, of Animal Industry, of Economic Botany and Economic Entomology. The work of the chairman of these divisions is co-ordinated by a Director of experiments.

The committee which has had charge of the work of organizing and drafting the constitution and by-laws, and to whom great credit is due for completing it so successfully, was composed of the following members: Theodore Ross, special Nature-Study student in the Winter Agricultural Course, chairman; G. F. Warren, '03, secretary, assisted by T. C. Johnson, Fellow in

Agriculture; F. A. Salisbury, Winter Agricultural Course, and Scott H. Perky, special in Agriculture.

The following officers were elected: President, James E. Rice, C. U., '90; First Vice-president, S. A. Beach, horticulture, Experiment Station, Geneva, N. Y.; Second Vice-president, Jared Van Wagenen, C. U., '91, Cobleskill, N. Y.; Secretary-treasurer, John Craig; Director of Experiments, J. L. Stone.

The following names compose the list of charter members of both classes:

Active. — Nathaniel J. Hitchcock, F. A. Salisbury, Henry E. Haslett, Orlo H. Perry, F. E. Bailey, Dwight E. Carley, F. H. McLaury, Lynn F. Ayer, Ernest P. Best, Hubert D. Gage, Webster F. Merrithew, Marvin Croop, S. M. Jones, J. Raymond Dillin, C. E. Nichols, R. W. Urtel, James B. Rymph, John Craig, J. L. Stone, Miss Martha Van Rensselaer.

Associate. — John R. Bodurtha, D. Curtis Stanion, Albert R. Mann, Simon Simpkins, Benjamin F. Garber, Bruce M. Wilmer, G. F. Warren, Christian Bues, J. Clarence Reist, T. C. Johnson, Robert Steele.

It is exceedingly gratifying to know that the membership list in both of these classes has grown rapidly since the organization of the League. There are at present 60 active members and 26 associate members.

Experimental Work.—On April 1st, the Director of experiments issued a circular which outlined the active work which would be undertaken this year, and the particular lines of experiment which it was desired to inaugurate. These experiments were grouped under three heads: field crops, horticulture and animal industry. It was thought wise to concentrate rather than to dissipate the effort of the League.

Field Crops.— To this end the at-

The Cornell Countryman

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DECEMBER, 1903

Announcement For some years there has been a growing desire to establish an agricultural periodical at Cornell University. Such a publication is necessary in order to keep the former students in touch with each other and with the college, and to present the advances in agriculture. This is the mission of the CORNELL COUNTRYMAN. It is published by students and graduates of the College of Agriculture, and meets the hearty approval of the faculty; but the editors are responsible for the policy of the paper.

It is not our purpose to enter the field so well filled by the many excellent farm papers; but rather to appeal to the student of agriculture, be his work in farming, teaching or investigation. In the CORNELL COUNTRYMAN we hope to voice the best in agricultural progress and agricultural teaching. We will present articles that deal with the larger problems of country life, the economic and social conditions, the rural school and the farm home. The results of scientific investigations and general agricultural news will be given promi-

nence. Special attention will be given to news of former students.

The French Peasant

“The French Peasant, Before and After the Revolution,” is the title of an article by Madame Mary Duclaux, appearing in the September and October numbers of the *Contemporary Review*. The matter is interesting throughout and must be a surprise to those who, amid the conditions of our comparatively enlightened agriculture and society, have not imagined the possibility of the existence of terribly bad agricultural conditions outside of China and Turkey. We are astonished at this contrast with the brilliant, progressive liberty-loving and fraternal France we delight to read of. While pitying the French peasant, with his contract rents and rents levied by custom, withal extortionate; with his slender acres and more slender and uncertain means, and his life of toil and anxiety; we are led to feel grateful that our land was not settled during a feudal epoch, which seems to impress itself so firmly upon a people that it takes decades or centuries even of a better regime to dissipate its influence. It is a relief to be told that economic and social reform is beginning, and that the future is bright with hope for rural France.

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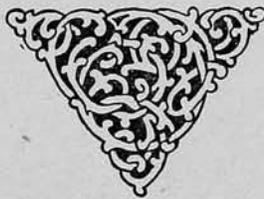
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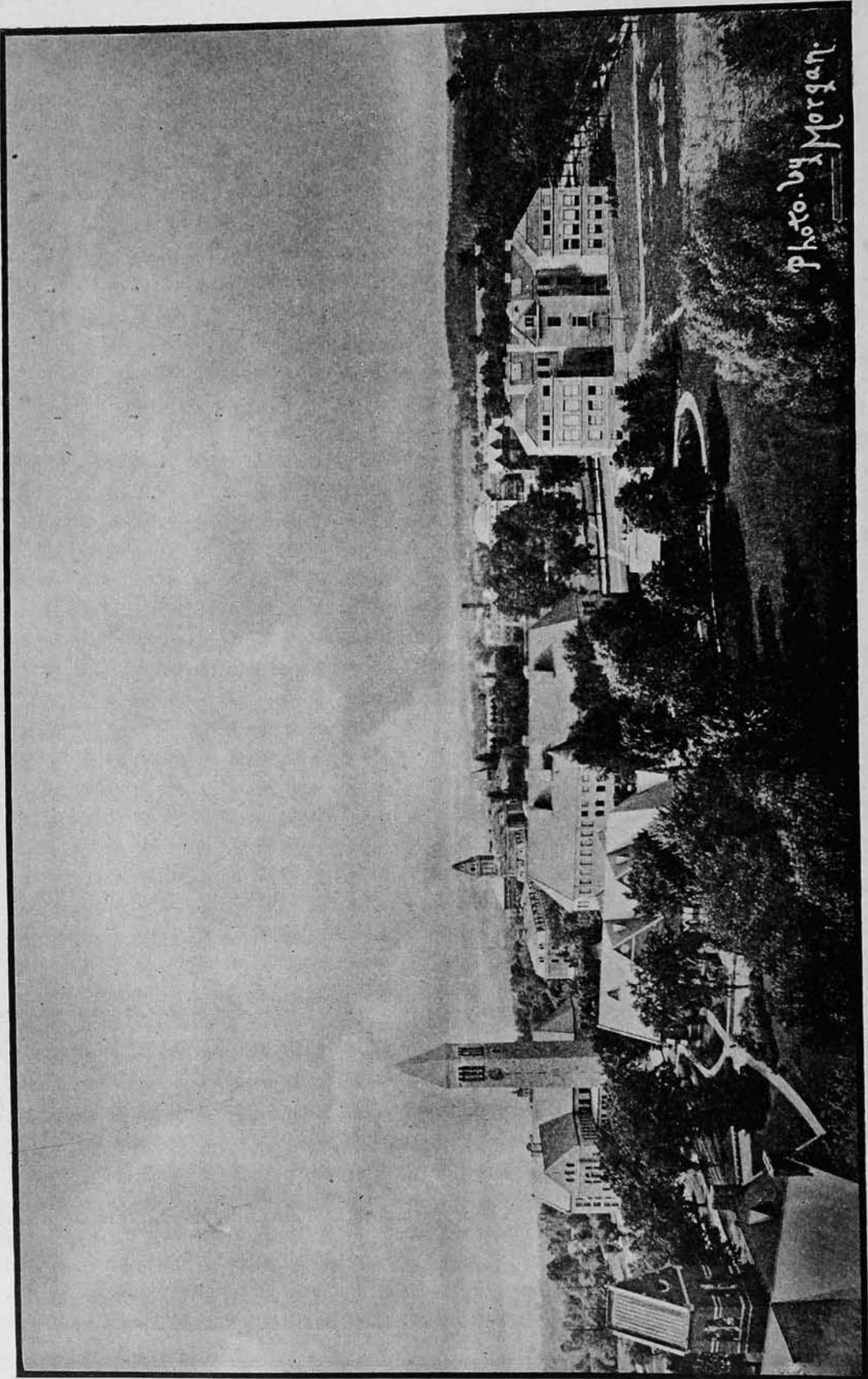


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A VIEW ON THE CAMPUS

Boys and Girls

THE BOYS AND GIRLS OF THE WORLD

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By *F. E. Dawley*

Director of Farmers' Institutes for New York

It is probable that no one agency has ever done so much for the advancement of agriculture in America as the establishment of the land grant colleges. These had not been in operation very long, however, before the necessity of more accurate information in relation to agricultural subjects was apparent, and following the land grant college came the experiment station. Comparatively few people availed themselves of the advantages of university agricultural education, and some means of popularizing the work of the experiment station and making available to a larger number of people the immense amount of valuable information which was being obtained seemed needful. To meet this necessity the farmers' institutes were established. At the very first their value was apparent to thinking agriculturists, but they were not so popular as they might have been from the fact that many of the practical farmers stood in awe of the scientific investigator, the college professor and the "book farmer" who came to their meetings, and the attendance was not what was wished. A little unbending on the part of the instructors and their hearers as well, aided wonderfully in bringing them together, and at the present day no branch of agricultural instruction is so popular as the institute movement. This is easily attested from the fact that nearly all states have provided in one way or another for the maintenance of farmers' institutes, and the United States government, realizing the necessity of securing more uniform work in all sections and pushing forward this means of instruction in states where it is not already established has created a division of its bureau of experiment station work,

and appointed an officer known as Farmers' Institute Specialist, whose duty it is to inquire into means and methods, and report.

Few states are doing as much for the Bureau of Farmers' Institutes as New York, where \$20,000 is provided yearly and last year 312 institutes were held, something over 160 different speakers were present and addressed audiences aggregating nearly 100,000 people. In a state like New York where the agricultural interests are so varied a wide range of subjects must be covered, which calls for specialists in very many lines at the various meetings, and an intimate knowledge of the agricultural conditions in the various sections of the state in placing them. From attendance at institutes in many other states, I am convinced that on the whole the New York State farmers are as thoroughly advanced in their specialties as any men to be found. It is pretty hard work for a speaker to give the potato specialists of eastern Long Island anything very new in relation to cultural methods, and the man who attempts to speak on apple growing in western New York must remember that many a man in his audience has not only made a success of this branch of horticulture, but has made a competency in following it. In dairy sections can be found men who have fed cows and established world's records, and in other parts of the state horse-men who have bred and trained world's record makers. It is the exception to find a farmer in the state who cannot read understandingly matter that is quite technical in the direction in which he is most interested, and our farmers' wives on the average have a better common school education than the average resident of

the towns and cities. Even though this is true there is much room for improvement, and to meet the problems which are constantly arising more information is needed.

The farmers' institute endeavors to bring this knowledge practically to the door of the farmer, and by word of mouth to impress upon him the advantage of securing all the light possible regarding his occupation and living up to it. The institute also impresses upon the young men who are just starting out in life that under present conditions farming offers as good inducements for a bright boy as any other calling, and besides gives one the opportunity of life in the country where he is enabled to keep in close

touch with nature and enjoy through all his years the very things that most men are striving for when they can afford it.

This year something over 300 institutes will be held in New York state, and judging by the attendance at the initial meetings the number who will avail themselves of the instruction will be greater this year than last. A Normal Institute was held at Geneva and Ithaca the last of November to increase the efficiency of our work and establish greater uniformity in the statements which are made, sorting out the facts from the theories, the false from the true, the practical from the impractical, and establish for the work a higher standard than ever before.

A READING COURSE FOR HOUSEWIVES

By Martha Van Rensselaer

Supervisor Farmers' Wives' Reading Course

The only reading course instituted for farmers' wives is at Cornell University. It is a part of the extension work provided by state appropriation for agricultural purposes, and touches the farm home more than the outside interests of the farm.

This course was instituted by the same men who superintended the Farmers' Reading Course and the Nature Study in the school and home. They have recognized the fact that upon the farm home woman depends much of the success of the farmer in his work, and indirectly much of the success of the community, for upon their work together there is great dependence for the physical comforts of life.

It is a mistaken conclusion that women are divided into two classes, farmers' wives and other wives, and that the laws of society and the standard of intelligence are indicated by these two distinctions. The women of the city and country have in many instances grown up together, studied in the same schools, and graduated from the same course of study. Later, some have settled in the city or village while others have remained on the

farm or have gone there because they have married farmers. To be sure, there is a difference in environment,—those conditions which effect the growth of women intellectually and spiritually. However, while one is broadened along the lines of entertainment, culture, and knowledge of persons and of the world, the other has inspiration and culture from nature and the benefits of more quiet reading and helpful living.

The farmer's wife needs to become intelligent along the lines of home making. It is said that housekeeping is based upon ten sciences. If this is true, the farmer's wife makes use of the whole ten. She has opportunity also to show her talent as an artist in home and personal decoration. She becomes at times her own milliner and dressmaker, and for want of opportunity to secure the help of specialists, she makes herself capable of doing everything needed in the home.

She is her husband's partner in the economic side of life. While he is more closely related to his home in presence and personal helpfulness than most men, because his occupation leads him to make the farm his headquarters,

she, at the same time is bound to interest herself in the outside work of the farm. In the busy times on a farm, she hurries the housework in order to assist in the outdoor work which may be in accordance with her strength. This work added to her household duties may be heavy for her, yet she is physically benefited by exercise out of doors, for which her sisters in the city and village have not the opportunity.

Of recent years, the farmer's wife has been much benefited by the advantages afforded by the Grange and Farmers' Institute. She has attended these meetings with her husband as an interested partner. The demand is becoming greater all the time for work especially adapted to her needs to be presented in these meetings.

With these conditions in mind, the Extension Department at Cornell University, which we have said was supported by state appropriation, has instituted a course for women, with special reference to the farm women, by which they may receive literature which will lighten the burden of house-keeping and lead readers to regard the work of the home as one of interest and inspiration, rather than one of drudgery.

Three years ago a letter was sent from the Extension Department to the farmer's wife, asking if she would be interested in a course parallel to that of her husband in the Farmer's Reading Course. The response in the way of letters and names sent for the lessons lead to the preparation of a series

of lessons which are to comprise a three years' course of reading. These lessons are upon various subjects of home life,—Saving Steps, Home Sanitation, Saving Strength, Practical Housekeeping, Reading in the Farm Home, The Farm Home and Rural School, Foods, and Home Decoration. A quiz accompanies each lesson which allows the reader to express her own ideas relative to the subjects treated.

The third year of the course is just being entered upon with a membership of fifteen or sixteen thousand women, most of whom are in rural communities. It has been found an advantage to organize clubs among rural woman in order to secure a greater interest among themselves, and to admit co-operation along the lines of study for home improvement. Several clubs have been organized already in the state and members are pursuing the study of home life, some with no other literature than that sent out by the University, while others are using the Traveling Library afforded by the State Library at Albany. A nominal fee is charged to pay for transportation, and the books may be retained for six months if desired. A certificate of registration is granted by the Extension Department for work done in these clubs.

The chief work of the Reading Club consists in preparing and sending out lessons upon home life subjects, examining the quizzes returned, attending to correspondence with members as well as speaking at granges and clubs upon the subjects introduced into the course.

Give fools their gold, and knaves their
power;
Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
Or plants a tree, is more than all.

* * * * *

And, soon or late, to all that sow,
The time of harvest shall be given;
The flowers shall bloom the fruit shall
grow,
If not on earth, at last in heaven!

—J. G. Whittier.

NATURE STUDY AT CORNELL

By Mary Clement Shepperson, '06

Nature-study is one of the great educational movements of the day. It has to do with one's outlook on the world, with the harmonizing of people with their environment. It takes the child to the fields and woods, and there by the sympathetic study of air and water, soils, sunlight, frost, living things that move and living things that remain where they begin life—all the wonders that the "rolling year"

stated in their charter, is that the children may "love the country, and be content to live therein." The work is carried on through the teachers of the rural schools, but the College of Agriculture of Cornell University has supervision of all the clubs, and by monthly publications and by correspondence supplies the necessary instruction, and keeps up the enthusiasm for investigation. The leader in this



IS THE SEED COMING UP?

brings before the inquisitive mind of the child—it broadens the horizon and educates the individual.

The movement originating at Cornell is well known throughout the country on account of the university extension work in New York State. This is an effort to improve the material condition of the farmer by enlightening his mind, and to add to his happiness by putting him in sympathetic relation to his surroundings. The object of the Junior Naturalist Clubs, as

work is Professor L. H. Bailey. A scientist, author and teacher, he deems nature-study worthy of his best powers, and inspires all who know him with the dignity and strength of the work. But he could not accomplish all that he is now doing if he did not have the able assistance of Mr. J. W. Spencer, the children's "Uncle John," Mrs. Anna Botsford Comstock, and Miss Alice G. McCloskey.

As the desire for nature-study in the schools became universal there

arose a demand for specially prepared teachers. To meet this demand the College of Agriculture of Cornell is now giving a two-year course in nature-study. Botany, zoology, geology, entomology, agricultural chemistry, and physiography, give the teacher a scientific foundation for his work. Although nature-study is not science, it must be built upon fact. The nature-study point of view is obtained from seminaries and from personal contact with the leaders of the movement.

This being the first year of the course, everything is in its beginning. But even now, those who are specializing along this line realize how great is their opportunity. Their work is not confined to the university laboratories. One of the public schools of Ithaca has been thrown open to them for practice teaching. Here, while the student-teacher is opening the eyes of the children to the common things

about them, her own eyes are being opened to child life and to the best way of reaching young minds. So far, the lessons given have been on the autumn trees and shrubs, the dispersal of seeds, insects, the fossils so abundant in the rocks of Ithaca, and the fungi that destroy the farmer's crops. Each student has the advantage of the actual teaching, and of the observation from lessons given by others. When the class work is over several children from each room are taken to the fields and woods, where things are studied in their natural conditions. Some interesting experiments in plant physiology are being planned for the winter months, and when spring comes, then, will the children begin their school gardening, with Professor Bailey to show them how. Other plans are being matured, and there is a spirit of vigor, growth, and progress pervading the whole work.

SOME FEATURES OF EXCEPTIONAL INTEREST AT THE RECENT MEETING OF THE AMERICAN POMOLOGICAL SOCIETY IN BOSTON.

By John Craig, Secretary

The twenty-eighth biennial session of this society was in many respects an epoch-making session. It brought the members back to the city of Boston, always fragrant with early memories of pomological endeavor; it connected the past with the present by bringing together the aggressive commercial horticulturist of to-day with the amateur fruit lover of New England. In this respect it was unique. Probably nowhere in the country is the amateur spirit so dominant as in Boston and its environs. Fruits are still examined critically and judicially, and passed upon according to intrinsic quality-merits as well as upon the basis of extrinsic market-values. More time was devoted, too, to the amateur side than has been wont at recent horticultural councils. Sentiment, philosophy, history and education were delightfully interwoven with practical issues in the make-up of the program. Is not this

as it should be? Are we not too much prone to consider the commercial side alone?

An important event occurring at this meeting was the birth of the new Society for Horticultural Science. The promoters of this society were anxious to have it clearly understood that the proposed field of the society would in no way trench upon the provinces of the American Pomological Society. There is no doubt that the two organizations will supplement and increase the efficiency of each other.

Boston, in many respects, is an ideal meeting place for a society interested in things out-of-doors. The library of the Massachusetts Horticultural Society is a feature which captured the interest of many of the horticultural students. The city is unique in possessing a hall erected exclusively for the promotion of practical and theoretic horticulture. The vicinity of

Boston abounds in points of interest historically and horticulturally. Among these may be mentioned Bunker Hill Monument, the State House, Faneuil Hall, Harvard University, Arnold Arboretum, the Metropolitan Park system, and the many vegetable forcing establishments in the vicinity of Arlington. While the time of those attending the meeting was very thoroughly occupied, yet opportunity was afforded to visit many of these places during the progress of the meeting.

Program.—This may roughly be divided into five groups: (1) The amateur and educational group. In this group such papers as the noted address by Professor Bailey on "the attitude of the schools to country life"; the amateur school garden as viewed by the fruit-grower and the strict amateur, were presented. The address by Professor Bailey was received with profound interest, and was unquestionably the leading feature of the entire program. (2) Commercial fruit culture. Making up this group were a number of papers dealing with the handling of the fruit from and including the time it was taken from the orchard to its final destination in the hands of the consumer. The various phases of grading, packing and cold storage facilities were handled by competent men. (3) A general report by the chairman of the fruit committee, being a condensed, yet broad, statement of the present trend and progress of fruit culture in the different states of the Union and the provinces of Canada. This report in itself is invaluable to the man who wishes information in regard to the fruit prospects from the grower's standpoint in the different parts of the country. (4) An entire session was given up to a symposium on the "progress of pomology in America," and this was indeed a great treat. The printed "proceedings" of this session will furnish an exceedingly valuable repository of historical fact relating to fruit growing. Especially is this true of the comprehensive review of the development of horticulture in the middle-west, presented by Colonel G. B. Brackett of Washing-

ton. Not less valuable were the papers from those representatives of New England, Canada, the southern Atlantic states and the Pacific coast. (5) Mr. Charles W. Garfield, chairman of the Executive Committee, was responsible for a particularly enjoyable evening which might be entitled "a chapter on ideals." These "ideals" covered not only types of fruit grown for desert or market, but touched the fruit-grower himself, whether amateur or commercial, and the various views of those chosen to represent the nineteen ideals presented will, when brought together, offer a powerful inspiration to those who are engaged in, or are considering the possibility of taking up the cultivation of fruits.

Important Resolutions. — Among the resolutions passed (there were not a great many of them) there were one or two of especial cogency. A committee was appointed and instructed to formulate a reasonable and workable scheme of judging fruits by points. This was dubbed the "score-card" committee. The committee will work in conjunction with the management of the Louisiana Purchase Exposition and are expected to present an *ad interim* report, or if not that, a report at the next meeting of the society.

A committee was also authorized to formulate a system of definitions covering very explicitly the various grades of apples placed upon the market. These definitions to be sufficiently accurate and lucid as to be a real guide to the packer. This committee was given authority to draw up an act which, if passed, will be expected to enforce the honest packing of fruits.

Among the reports adopted was one important one entitled "a code of nomenclature," and adapted to pomological conditions. This code is a modification of the Cornell Horticulturists' Lazy Club code proposed and offered to the public some four years ago.

The following officers were elected to conduct the business of the society during the next biennial term: President, J. H. Hale, South Glastonbury, Conn.; First Vice-president, Charles

W. Garfield, Grand Rapids, Mich.; Secretary, John Craig, Ithaca, N. Y.; Treasurer, L. R. Taft, Agricultural College, Michigan; Chairman of Executive Committee, C. L. Watrous, Des Moines, Iowa.

DODDER IN NEW YORK ALFALFA FIELDS

By J. L. Stone

Assistant Professor of Agronomy

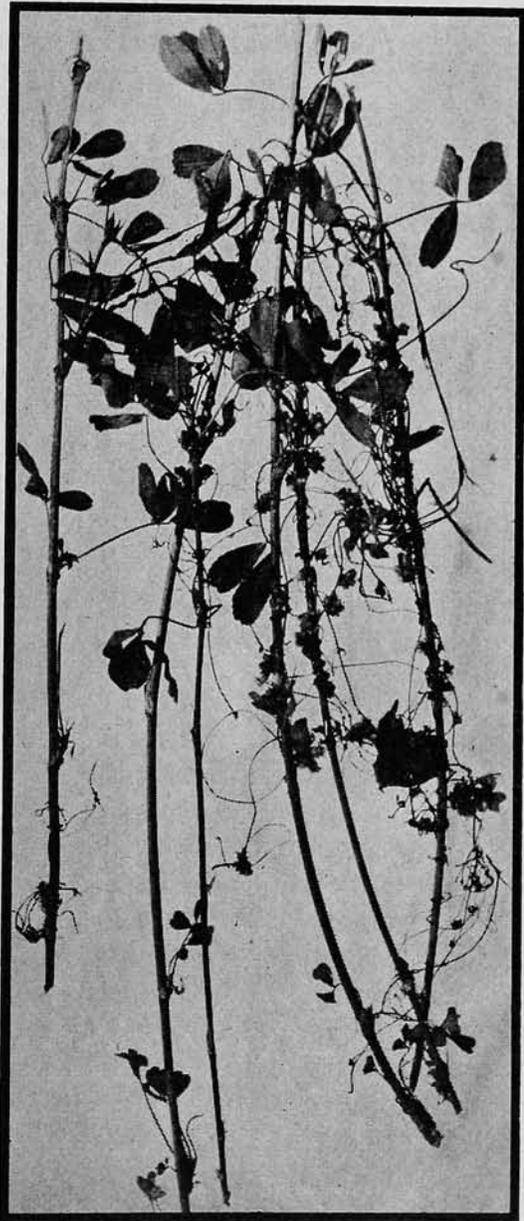
The dodders, of which there are a number of varieties, have for many years caused much trouble for the farmers of the old world, but while known here have not done sufficient damage in the United States to attract much attention from farmers. They are parasitic plants, that is they live on other plants. The seeds, like those of other plants, germinate in the soil, but instead of depending upon the soil for nourishment, the young plants soon twine around the host plant, sending a sort of rootlet or filament into the structure of the host plant so as to feed upon its juices. The dodder then severs its connection with the soil and thereafter lives upon the host plant, usually to the destruction of the latter.

The attention of the College of Agriculture has recently been called to the fact that dodder has established itself in certain parts of Onondaga county in the alfalfa fields in a way to cause alarm as to final results.

Its presence is also reported in several other counties of the state. It is believed that unless it is intelligently combatted it will cause much loss to the farmers of the state. It is now too late to undertake repressive measures this season as the seeds are matured and on the soil, but it is hoped that the College of Agriculture will be able next spring to offer suggestions that will enable the farmers to hold it in check or completely exterminate it. In the meantime the College desires, if possible, to locate every clover or alfalfa field in the state that is infected with dodder, so that advice as to its treatment may be sent to the owners, and so that we may carefully watch the results of the treatments suggested.

In order that those unfamiliar with

dodder may be able to recognize it we append a brief general description. The dodder plant has no true leaves. The stems consist of slender thread-



DODDER (*C. epithymus*) GROWING ON ALFALFA

like structures much resembling the silks of corn ears. These stems usually are of a yellow or golden color while fresh or they may be a reddish

pink. Some varieties wind themselves around the base of the clover or alfalfa stalk, and then interlace with one another close to the surface of the soil forming a close mat. One of these from Onondaga County seems to be a new species. Other varieties twine their stems all over the host plant something like a lot of cobwebs. The accompanying photograph shows one of these (*Cuscuta epithymus*) twining around the alfalfa stems. It will be seen that the dodder has no connection with the soil. Dod-

der appears in patches in the fields, and is likely to attract attention at mowing time. After the trouble has made some progress in a field there will be circular patches where the host plants have been partially or entirely destroyed and surrounding this a strip 2 to 4 feet wide where the struggle between the two plants is going on. Thus with succeeding generations of the dodder the circle representing the seat of war and the enclosed area showing its devastation are continually increasing in size.

THE AGRICULTURAL EXPERIMENTERS' LEAGUE OF NEW YORK.

By John Craig

Professor of Horticulture

There was held on the evening of March 3, 1903, in the Dairy Building, a very important mass meeting of the students of the College of Agriculture. At this meeting there was organized a league "for the purpose of carrying on co-operative experiments in the various departments of farm husbandry; for the promotion of intercourse among those studying farm problems; for the advancement of agricultural education; for the collection and dissemination of data relating to country life; and for the purpose of supporting legislation favorable to the promotion of these objects." There were to be two classes of members, active and associate. The active members are residents of the state of New York who have been connected as students with Cornell University or any other school of agriculture, or those who are engaged professionally in any agricultural investigation. In this way the Experimenters' League had its inception. Primarily, it is an organization of the students of the College of Agriculture for the purpose of fostering a spirit of investigation among farmers. It will be a powerful lever in carrying out agricultural reforms. The work of the League is divided into various branches. Each branch is presided over by a chairman. There

are divisions of Field Crops, of Horticulture, of Animal Industry, of Economic Botany and Economic Entomology. The work of the chairmen of these divisions is co-ordinated by a Director of Experiments.

The committee which has had charge of the work of organizing and drafting the constitution and by-laws, and to whom great credit is due for completing it so successfully, was composed of the following members: Theodore Ross, special Nature-Study student in the Winter Agricultural Course, chairman; G. F. Warren, '03, secretary, assisted by T. C. Johnson, Fellow in Agriculture; F. A. Salisbury, Winter Agricultural Course; and Scott H. Perky, special in Agriculture.

The following officers were elected: Honorary President, I. P. Roberts; President, James E. Rice, C. U., '90; First Vice-president, S. A. Beach, Horticulturist, Experiment Station, Geneva, N. Y.; Second Vice-president, Jared Van Wagenen, C. U., '91, Cobleskill, N. Y.; Secretary-treasurer, John Craig; Director of Experiments, J. L. Stone.

The following names compose the list of charter members of both classes:

Active. — Nathaniel J. Hitchcock, F. A. Salisbury, Henry E. Haslett.

Orlo H. Perry, F. E. Bailey, Dwight E. Carley, F. H. McLaury, Lynn F. Ayer, Ernest P. Best, Hubert D. Gage, Webster F. Merrithew, Marvin Croop, S. M. Jones, J. Raymond Dillin, C. E. Nichols, R. W. Urtel, James B. Rymph, John Craig, J. L. Stone, Miss Martha Van Rensselaer.

Associate. — John R. Bodurtha, D. Curtis Stanion, Albert R. Mann, Simon Simpkins, Benjamin F. Garber, Bruce M. Wilmer, G. F. Warren, Christian Bues, J. Clarence Reist, T. C. Johnson, Robert Steele.

It is exceedingly gratifying to know that the membership list in both of these classes has grown rapidly since the organization of the League. There are at present 60 active members and 26 associate members.

Experimental Work.—On April 1st, the Director of Experiments issued a circular which outlined the active work which would be undertaken this year, and the particular lines of experiment which it was desired to inaugurate. These experiments were grouped under three heads: field crops, horticulture and animal industry. It was thought wise to concentrate rather than to dissipate the effort of the League.

Field Crops.— To this end the attention of the experimenters was focussed, in field crops, on alfalfa, with a view of bringing out the best methods of obtaining a catch; on oats, for the purpose of making a variety test; on fertilizers, with a view of determining influences of the three principal elements; on potatoes, to gather information in regard to the value of different varieties and methods of cultivation. In addition to these, sunflower was tested for silage; soy bean for forage and green manurial qualities; field beans and buckwheat, variety tests, and winter vetch for the purpose of determining its value as a soil renovator. A very hearty response to a circular setting forth the lines of work was received by Professor Stone, and in these particular features of field crops valuable work was done the past season.

Horticulture. — The horticulturist

has been obliged to wrestle with peculiar climatic difficulties the past season, and these have prejudicially influenced the quality of results. Among the experiments tried were cover crops, for the purpose of ascertaining the adaptations of certain plants under shade and in the open; the amount of seed to sow per acre; and the amount of fertility yielded by each. Experiments were planned to demonstrate the value of ammoniacal copper carbonate as a preventative of peach and plum rot, and to demonstrate the influence of thinning stone fruits. In addition, a limited number of strawberry plants were distributed for test. It is gratifying to state that reports have been received from the majority of those undertaking the experiment whether it was possible to complete the work satisfactorily from the experimenter's standpoint or not.

In animal industry, methods of milking with a view of testing the value of the Hegelund method of milking were instituted.

On the whole, the organization has met with a very warm reception at the hands of graduates and ex-students. It will unquestionably prove a powerful bond of union, cementing the interests of the teachers and experimenters at the College and Experiment Stations with those of the rank and file of the farmers of this and other states.

The first annual meeting will be held in the month of January, the exact date of which will be announced later on. At this meeting we look for a grand reunion of the agricultural spirits, not only of 1903, but of those who have gone out in the previous decade, and even further back. We anticipate a great increase in membership at this meeting. The League has the active and cordial support of the Director and members of the instructing staff of the Cornell College of Agriculture, and there is no reason to doubt that its field of work will constantly widen and its sphere of usefulness continually increase as the years go by.

The Cornell Countryman

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DECEMBER, 1903

For some years there **Announcement** has been a growing desire to establish an agricultural periodical at Cornell University. Such a publication is necessary in order to keep the former students in touch with each other and with the college, and to present the advances in agriculture. This is the mission of the CORNELL COUNTRYMAN. It is published by students and graduates of the College of Agriculture, and meets the hearty approval of the faculty; but the editors are responsible for the policy of the paper.

It is not our purpose to enter the field so well filled by the many excellent farm papers; but rather to appeal to the student of agriculture, be his work in farming, teaching, or investigation. In the CORNELL COUNTRYMAN we hope to voice the best in agricultural progress and agricultural teaching. We will present articles that deal with the larger problems of country life, the economic and social conditions, the rural school and the farm home. The results of scientific investigations and general agri-

cultural news will be given prominence. Special attention will be given to news of former students.

Elsewhere in this issue we present an article on the Farmers' Institute.

This has become a permanent feature of rural education. Each year it becomes a greater power for the uplift of agriculture. It brings much of agricultural science to those who are unable to attend the college. But it would still be a necessity if all farmers had received such a training, for there are always new problems to be discussed, new discoveries to be presented. Agriculture is a living and growing topic—the questions of to-day are not those of to-morrow. The institute is a business meeting for business men, but it does much more than to improve the material conditions. It teaches how to spend as well as how to earn; it banishes the farmer's low estimate of himself; decreases the petty jealousies which prevent intelligent co-operation; and helps to make that independent, whole souled, hearty man, who is the fiber and sinew of our nation.

As the institute has grown, the kind of instruction desired has entirely changed. The instructor must now be in touch with the best in agricultural practice and agricultural science. The New York Bureau of Farmers' Institutes recognizes this fact. The entire force has just completed two weeks of study, one at Geneva, and one at Cornell. This meeting of the institute workers with each other and with the experiment station men is an inspiration to all. It is to be hoped that it will become a regular practice. Director Dawley expressed a desire to have a similar institute next year.

**Training
for the
Young Farmer**

As we turn from the well developed Farmers' Institute to the opportunities offered the farm boy, we are met by a less cheerful prospect. We now have nature-study quite generally presented to the younger children, have good agricultural colleges and excellent farmers' institutes; but what of the training for the boy between the nature-study period and the college and institute age? Agricultural teaching has developed from the college on the one hand and from the primary schools, in the form of nature-study, on the other. There remain to be established agricultural high schools. In time we shall have many of these in the state. We understand that the Agricultural College of Cornell stands ready to establish the first one and get the movement on a good basis, as soon as the state provides a building for the accommodation of the work. Wisconsin, Minnesota, Iowa, Nebraska and many other states have started such schools of agriculture in connection with their state universities. We hope that the Empire State will be the next to provide for its farmer youth.

**Agriculture for
Rural Schools**

Those interested in the progress of agricultural education may find two articles on that subject in October's *Review of Reviews*.

The first, which treats of the need of an articulated system of education for country boys and girls, instances successful trials, and is full of promise for the future. It is by Professor Willet M. Hays, of the University of Minnesota, and is entitled "Our Farmer Youth and the Public Schools." The city schools, from the primary grades to the high school and college, lead up one to the other ac-

ording to a system that has been long under development. But there has been no such unity in the rural schools, which have not given attention to the special needs of the farm child, but have taught the same subjects as are taught in the city schools, and aim also to prepare for further education in the city high school. Here the youth is in most cases weaned from the country. The article makes clear the harm that lies in this condition of things, and tells how it has been overcome in a few instances, and how it may be universally replaced by a system that will train the country youth to take advantage of all the benefits of country living.

The second article is by Mr. O. J. Kern, County Superintendent of Schools, in Winnebago County, Illinois. A plea is made for a more practical education of the farm boy. Mr. Kern describes the successful conduct of a club he organized last year, called "The Farmer Boys' Experiment Club." A "Girls' Home Culture Club" has also been organized. In closing he quotes from our Dean that "The day is coming when agriculture—under other names, perhaps, and not as a professional subject—will be taught in public schools as a 'culture subject.'"

**Irrigation
in
Humid Regions**

The *Experiment Station Record* tells of the work of Mr. Elwood Mead, chief of the irrigation investigations, who spent the summer studying irrigation in the humid parts of Europe.

He considers that irrigation is certain to become a large factor in increasing crop production in the humid regions of the United States. The conditions which make it pay in Europe exist here. They irrigate, not because they have to, but because it pays.

and this where the annual rainfall is about 40 inches. The same crops are grown above the ditches as below them, the difference is in the luxuriance and perfection. The most remarkable results are obtained in the production of hay. In some parts of Italy where wheat and corn are grown, unirrigated land sells for about \$100 per acre, the same land when brought under irrigation brings \$160 to \$180 per acre.

This seems to us a promising field for experiment, and it is to be hoped that some of the eastern experiment stations will give it serious consideration. As farming becomes more intensive, irrigation is certain to become a practice in some places in the East. Has not the time arrived when the experimenter should begin to give more attention to it?

Some work has already been done. We hope to present an article on the subject in the near future.

**Chemistry of
the Soil and
Crop Production**

“The Chemistry of the Soil as Related to Crop Production” is the title of Bulletin 22 of the Bureau of Soils. Probably no bulletin of recent date will cause more discussion. As will be seen from the following review, some of the conclusions cut squarely across the ideas formerly held by chemists. It is quite certain to arouse a considerable amount of vigorous research.

The procedure of the Bureau of Soils in its classification and mapping of soil types during the past ten years has been based upon the assumption that the adaptation of crop to soil is controlled by the water holding capacity of the various soil types. This water holding capacity depends upon four factors: namely, the texture of the soil, or size of the soil particles; its structure, or their arrangement in

space; the natural underdrainage of the soil; and the physiographic position of the type. The results of surveys of 20,000,000 acres of various soils have gone far toward proving the validity of the selection of this group of soil characteristics as a basis for soil classification. At the same time, it has been recognized that the fertility of different portions of the same type varied considerably. It was therefore postulated that the chief factor controlling fertility must be the chemical composition of the soil solution from which plants directly secure their food. A method of water analysis was therefore perfected for the chemical determination of the character of soil solutions. 100 grains of the soil are taken, stirred vigorously for 3 minutes with 500 cc. of distilled water and the particles allowed to settle for 20 minutes. The supernatant solution is then decanted and filtered by the forced air Pasteur filter devised by Briggs. This filtered solution is then tested for various chemical elements.

In the work described by the bulletin determinations of calcium, potash, phosphoric acid, and nitric acid were made the basis for the conclusions drawn. Determinations of other elements or compounds were also made.

The results briefly summarized show that medium to good crops are recorded from soils giving less than 4 parts per million of phosphates, 3 parts per million of lime, 1 part per million of nitrates, and 8 parts per million of potash.

The average of 147 determinations show the following values in parts per million of air dried soil:

Phosphoric acid.....	7.64
Nitric acid.....	5.47
Calcium	11.67
Potassium	22.74

That is, in the normal soil solution there are present from 3 to 6 times as large amounts of dissolved plant foods as are necessary for the production of average crops. Moreover, it was shown that in many instances wheat crops of from 20 to 25 bushels per acre were being produced on soils whose solutions contained smaller amounts of the necessary plant foods than were present in soils producing from 2 to 5 bushels of wheat per acre.

In other words, the chemical composition of the nutrient solution contained in soils is not the controlling factor in the maintenance of soil fertility. The search for this controlling factor is definitely placed in the domain of physics. The actual amount of the soil solution contained in a soil and the rapidity with which it can move from place to place in the soil appear to be the true controlling factors in the quantity of crops produced. There remain to be determined the optimum physical condition for each soil type, and the methods by which this condition can be produced.

The bulletin discusses the influence of climate, soil texture, crop rotation, and variety upon the total yield. There is also a short discussion of the role of commercial fertilizers under this new determination of the factors controlling soil fertility.

"The conclusion seems justified that, although differences in the dissolved salt content, or in the concentration and composition of the soil moisture, may be a factor in the yield as well as quality of a crop, it does not appear to be a major one in determining or controlling the wide variations observed in crop yields on different soils. It appears further that practically all soils contain sufficient plant food for good crop yield, that this supply will

be indefinitely maintained, and that this actual yield of plants adapted to the soil depends mainly, under favorable climatic conditions, upon the cultural methods and suitable crop rotation, a conclusion strictly in accord with the experience of good farm practice in all countries, and that a chemical analysis of a soil, even by these extremely delicate and sensitive methods, will in itself give no indication of the fertility of this soil or of the probable yield of a crop, and it seems probable that this can only be determined, if at all, by physical methods, as it lies in the domain of soil physics.

"Finally, it seems appropriate in concluding this bulletin to quote the words, written a generation since, of one of the masters in agricultural science. Said Johnson, in 1870: 'It is a well-recognized fact that next to temperature the water supply is the most influential factor in the production of a crop. Poor soils give good crops in seasons of plentiful and well-distributed rain or when skillfully irrigated, but insufficient moisture in the soil is an evil that no supplies of plant food can neutralize.'"

Tuberculosis At the recent meeting of the American Veterinary Medical Association, held at Ottawa, Canada, a day was given to the discussion of human and bovine tuberculosis. It was conclusively shown that the two may be intertransmissible, and this conclusion was generally accepted.

The September meeting of the International Congress of Hygiene and Demography, held at Brussels, Belgium, came to the same conclusion. The opinion of the congress was expressed in a resolution recognizing the possibility of such intertransmission of

tuberculosis, and urging that the precautions for its prevention be vigorously continued.

At this meeting Arloing reported that he had succeeded in making cattle immune by inoculation.

Pepsin a Substitute for Rennet

In the *Agricultural Student*, Professor Vivian discusses the successful use of pepsin as a substitute for rennet in cheese making. Several successful trials have been made on a commercial basis. The first prize at the Ohio State Fair was awarded to a pepsin cheese. Pepsin is more constant in strength and keeps better than rennet. There is at present practically no difference in cost.

A Profitable Dairy Farm

"How to Make a Living Out-of-Doors" is the heading for a series of articles that Professor Bailey will have in *Country Life* from time to time. In November's paper is a "Sketch of a Profitable Fifteen-acre Dairy Farm on the Outskirts of Philadelphia." This was chosen as the first of the series to illustrate what it is thought should be particularly emphasized, viz., that it is not the special or peculiar crops but the staple and reliable products that must always engage the attention of the far greater number of men; and therefore the endeavor should ever be to improve the ways and means of the production and distribution of these. "The common industries of to-day are likely to be common industries of the future, but they will be uncommonly well pursued."

The owner of the dairy farm is Rev. J. D. Detrich, who came by his present lay occupation against his intentions because "twenty years ago this little farm fell to him." He knew

nothing about cows, but was open to suggestions and, furthermore, read up on the business until, in his success, he calls himself a "book farmer." He believes thoroughly in agricultural education.

The farm, very ordinary in its appointments, is most impressive for the things absent, but nevertheless is probably as remarkable as any other farm in America. Hardly more than thirteen acres are tilled, yet it grows roughage enough for the twenty-nine cattle and two horses. Of course the land is wonderfully rich, and the physical condition excellent.

The cattle do not leave the stalls winter or summer, but all about them is kept clean and wholesome, and their friendliness evidences kind treatment. They are fine Jerseys of strikingly uniform quality. More than half of them are always in milk.

The milk produced during winter and summer varies but little in amount and tests about 5.80 the year round. It is supplied to a sanitarium for consumptives, and therefore the most scrupulous care is taken to deliver it in perfect condition. 6½ cents a quart is received for it.

Corn Growing and Corn Growers

The *World's Work* magazine, always appreciative of agricultural industry, has in November's issue an article on "Corn Growing and the Corn Growers," by T. N. Carver, Professor of Economics in Harvard University. Last summer Professor Carver made an extended journey on horseback through the heart of the corn-belt, and considers that he was fortunate both in his selection of the means of locomotion and the route traversed. The Bostonian arrived at a conclusion that will bring a twinkle to the eyes of our

not undersensitive westerners, viz. that soon the East, with its barren fields, and not the West, abounding in utilized fertility, will be called "wild."

Professor Carver shows that corn growing is our largest industry, and illustrates the fact, often forgotten, that we are still pre-eminently an agricultural people. The importance of the feeding industry is treated at some length. He thinks that the skill required in corn growing will militate against extensive corn farms, the small farmer not needing to trust to unskilled labor, and therefore having a great advantage.

GENERAL AGRICULTURAL NEWS

The legislature of South Carolina has appropriated \$40,000 for the erection of a central agricultural building.

* * *

The legislature of Hawaii has appropriated \$111,650 for the departments of Agriculture, Horticulture and Forestry of those islands.

* * *

A new Agricultural College was opened at Moriaka, Japan, last April. The director is Professor Tamari, a graduate of the Michigan Agricultural College. The interest in agricultural education there is quite wide spread, as this is the third agricultural college in that country.

* * *

At Moravia, N. Y., a few weeks ago the best apples were selling at 25 cents per bushel. Apples of the same quality in Wayne and Ontario Counties were bringing \$1.75 and \$2.00 per barrel. This difference is to be explained by the fact that the apple industry in the former region is not large enough to attract many buyers and so cause keen competition. One western buyer was there and bought at the above price. He was shipping in bulk in cars lined with straw. Bar-

rels are at a premium in all parts of New York.

* * *

An accident occurred recently in the Agricultural College at Columbus, Ohio. One of the boilers exploded killing the engineer and assistant engineer, and also injuring a number of students, among whom was Professor Davis, a former Cornell man, now assistant in Agronomy in that college.

* * *

W. H. Bishop has resigned his position as Professor of Agriculture in the Delaware College to engage in dairy farming and stock breeding at Scarsdale, N. Y.

* * *

P. J. Parrot, of the Ohio State University, has been appointed entomologist at the Geneva Experiment Station where formerly he was an assistant to V. H. Lowe.

* * *

The Civil Service Commission announces an examination for December 16, to fill the position of teacher of agriculture in the Indian service, salary \$1,000 per year. Graduates of agricultural colleges are desired.

* * *

Dr. E. E. Ewell, assistant chief of the U. S. Bureau of Chemistry has accepted a more lucrative position with the German Kali works.

* * *

Of the 67 graduates of the Ohio Agricultural College, since 1892, 18 are engaged in agricultural college and experiment station work, 14 are employed by the U. S. Department of Agriculture, 30 are engaged in some form of farm work, 5 are in other callings.

* * *

The Missouri Station has established a laboratory for animal breeding, in which it intends to investigate some of the applications of Mendel's law.

* * *

Mr. W. J. Palmer has been appointed director of agriculture in the Orange River Colony, Africa, at a salary of \$6,000 per year. Mr. Palmer is a graduate of the Ontario Agricultural College.

The Illinois College has an enrollment of 265; the Ohio College 207; the Minnesota School of Agriculture, which is a part of the college, 460, of which 150 are girls.

* * *

An order has been issued revoking the quarantine against stock in Massachusetts and New Hampshire. The prompt and vigorous measures taken by Secretary Wilson have stamped out the dreaded foot and mouth disease.

* * *

Departments of soil physics and farm mechanics have been added to the Iowa State Agricultural College.

* * *

A department of forestry has been established in Maine University, with W. N. Spring in charge. It is supported by the state. Harvard University and the University of Nebraska have also established departments of forestry.

* * *

During the last session of the legislature of Wisconsin the following appropriations for agricultural purposes were made: \$25,000 for furnishing and equipping the new agricultural building, \$15,000 for a farm engineering building, \$10,000 for the purchase of improved live stock, and \$10,000 for the purchase of additional farm lands.

* * *

The Kansas Agricultural College has begun the erection of a commodious auditorium, for which the last state legislature appropriated \$40,000. The college has also, in the process of erection, a building for the exclusive use of the dairy department. This building will cost \$15,000, and will contain class rooms as well as quarters for dairy manufacturing.

* * *

During the summer meeting of the American Pomological Society in Boston, a society of Horticultural Science was organized. Its purpose is to encourage the development of the scientific aspect of horticulture as distinguished from the popular side. Its membership will be composed largely of experiment station workers and teachers of horticulture.

About thirty prominent horticulturists from different sections of the United States and Canada were enrolled as members, and others have expressed their desire to join. The officers elected were: President, L. H. Bailey; Vice-presidents, T. V. Munson, G. B. Brackett, E. J. Wickson; Secretary-treasurer, S. A. Beach.

* * *

The Iowa Agricultural College has annually an excursion day, on which the people of the state are invited to visit the college. Over 15,000 people were present when this day was observed this fall.

* * *

The Agricultural College of Ohio hopes to establish a regular university extension department soon. Some work has already been done.

* * *

President W. D. Gibbs was inaugurated president of the New Hampshire College, October 28. The new agricultural building was dedicated the same day.

* * *

Martin Prucha has been appointed bacteriologist, and E. B. Hart has been promoted to the position of assistant chemist at the New York State Experiment Station at Geneva.

* * *

H. O. Woodworth of the New York State Experiment Station has been placed in charge of a poultry station just established in California.

* * *

J. W. Hutchins has been appointed agricultural demonstrator at the Rhode Island Station. His work is to respond to calls to go to farms and give advice and demonstrations of spraying, soil management, etc.

* * *

South Carolina is a "hustling" little state. During July and August 32 farmers' institutes were held in different sections, with an aggregate attendance of 8,690. In addition a general institute was held at the state college with an estimated attendance of 1,500. The interest in institutes is rapidly increasing.

CORNELL NEWS

CAMPUS NOTES

Professor Roberts is enjoying the open air of California. Mrs. Roberts is visiting in Honolulu.

* * *

The appointment of James E. Rice as assistant professor of Poultry Husbandry, gives Cornell the honor of being the first university to establish such a chair.

* * *

The association of American Agricultural Colleges and Experiment Stations met at Washington the third week of last month. Cornell was represented by President Schurman, Director Bailey, Professors Hunt and Stone, and Mr. Perky.

* * *

The failure of the State Legislature to appropriate funds for the maintenance of the College of Forestry has necessitated the abandonment of that college. Many of its students are continuing the work in other institutions. Nine have gone to the Yale Forestry College, one to that of Harvard, and six to Michigan. A number have remained at Cornell and have entered other departments. Six of these are taking agriculture.

* * *

The new horticultural building of the University of Missouri will be dedicated on the 9th of December. Professor John Craig will give the dedicatory address.

* * *

B. B. Turner, who was recently an instructor in chemistry in Cornell University has been appointed chemist of the Storrs' Experiment Station, Connecticut.

* * *

There are several organizations at Cornell intimately related to the college of Agriculture, among which are the Agricultural Association, the Lazy Club, the Log Cabin Club and the Jugatae. Lately there has been formed

a consolidation of these organizations whereby each keeps up its individuality by continuing its meetings, but all assemble fortnightly in a meeting at which Dean Bailey talks on some topic of general interest. This convocation affords a good opportunity to become better acquainted with others in our own college whose work keeps them in separate departments.

An agricultural seminar of faculty and graduate students has also been formed. It meets once a month. The first meeting was devoted to a discussion of Bulletin 22 of the Bureau of Soils, "The Chemistry of the Soil as Related to Crop Production."

* * *

During the past three months Sage Chapel has been closed and services have been held in Barnes Hall. The enlarged and newly decorated chapel will be ready for use about Christmas, and it is said that there will be no other university chapel in America equal to it.

* * *

W. R. Dunlop, '05, attended the National Grange meeting at Rochester.

* * *

Professor Fletcher, who has charge of the Extension Work in Agriculture announces that there are already over 130 applicants for instruction in the winter course in dairy work and over 50 for the general agricultural course. The dairy building has been fitted up to accommodate a hundred. A much larger number is expected to take the general agricultural course, applications for which need not be made so far in advance as is necessary in the case of the dairy work.

* * *

This fall the painting of Professor Roberts, which was given by his present and former students and faculty, was hung in the general Library reading room. The portrait is pronounced an excellent likeness by all. It is a credit to the artist, Mr. Forbes.

A young lady and a teacher in a distant part of the state, writes to one of the departments of the College of Agriculture as follows:

"Is it true that your department offers a course for teachers fitting them to be farmer's wives? If so, save room for six of us. We will take post-graduate work also to make sure we are all right. Send course of study."

The letter has been referred to the department having a correspondence course known as Farmer's Wives.

* * *

A few days ago a letter came from a farmer in southern France, who expressed appreciation of the Farmers' Reading-Course and a desire to take the work. He became interested in the course by reading a translation of a lecture on extension work delivered by Professor Craig in Quebec. The translation appeared in a French paper.

* * *

It is interesting to note the popularity of the Cornell College of Agriculture, as shown by the various countries from which its students come. Brazil, Japan, Turkey, Cuba, Yucatan, Germany, Rumania, Peru, Chile, Argentine, Canada and other countries and provinces are at present represented here.

* * *

Governor Odell visited the University November 13 and 14. While here he gave an address to the students, reviewed the batallion and attended the Columbia-Cornell game. He also inspected the State Veterinary College and the Agricultural College. We understand that the question of the re-establishment of the College of Forestry and the building of an agricultural hall were discussed.

* * *

Professor Cavanaugh attended the meeting of the Experiment Station Chemists, held at Washington in the latter part of November.

* * *

H. S. Lippincott, Sp. Agr., is in the Infirmary recovering from an operation for appendicitis.

Professor B. C. Buffum, director of the Wyoming Experiment Station, stopped in Ithaca for a few days on his way home from the recent convention of the Association of Agricultural Colleges and Experiment Stations. While here he addressed a meeting of the agricultural students in Barnes Hall, on the evening of November 24.

* * *

Professor Thomas F. Hunt, Miss H. A. Ellsworth, M. C. C. Van Loben Sels, and C. Stinchfield, Jr., attended the recent New York Horse Show at Madison Square Garden.

* * *

Yezo Hoshino, a graduate of the Imperial Agricultural College of Sapporo, Japan, has come to Cornell to take up agricultural work.

* * *

Dwight E. Carley, '06, was obliged to leave the University several weeks ago. His father was injured seriously by a fall, and Carley was called home to take charge of the farm. He has a younger brother, but help is scarce and it is doubtful whether he can get back for some time, if at all this year. Carley is a good student and thoroughly enjoys his work. We hope to see him back again soon.

"I trust your new enterprise will be eminently successful, and I hope that it will be the means of doing great good and of forming a united bond among the students of the College of Agriculture.

"Yours sincerely,
"I. P. ROBERTS."

"For years I have been hoping that there would be such a paper, and I wish to congratulate all concerned.

"WILHELM MILLER,
"Editorial Department, *Country Life in America.*"

"I wish the C. C. all kinds of good luck. I have no doubt you will be able to make the paper a necessity to any one who has ever been to Cornell.

"A. E. STENE,
"Assistant in Horticulture, R. I. C. of
of Agr. and M. A."

FORMER STUDENTS

In addition to the news, in each issue a complete record of some class will be given. By the end of the year we hope to have the record of each of the 1,100 former students. In order to make this department a success, we want to hear from every man who took agriculture at Cornell, and from every other Cornell man who is interested in agricultural work. Tell us what you have done since leaving Cornell and what you are now doing. Also mention others whose location you know. We need this information *immediately*.

* * *

'88, B. S. Agr.—G. D. Brill has recently returned from the Philippines, where he was engaged in agricultural experiment work for the U. S. government, and is now at his home in Poughquag, N. Y. His brother, Thomas Brill, Jr., who was a special in agriculture in 1892, and was in the winter course in agriculture in 1894, is also on the farm at Poughquag.

'89, B. S. Agr.—Hoxie W. Smith is with the Borden's Condensed Milk Co. at Genoa Junction, Wis. In a letter to Mr. Bues he says: "I am in receipt of your letter of Oct. 22nd, relative to the forthcoming of the CORNELL COUNTRYMAN. We will keep our eye peeled to catch the first glimpse of the new man when he makes his initial bow, and will welcome him to our fold. God speed to your new venture. As the ancient Persian proverb runs 'May his feet never weary, nor his shadow be less.'"

'98, M. S. in Agr.—S. W. Fletcher, B. S. Mass. Agr. Col. Mr. Fletcher received his Ph.D. degree in horticulture at Cornell '00. He was two years professor of horticulture at the Washington Agricultural College and School of Sciences, then at the University of West Virginia in the same capacity, and now has returned to Ithaca to take up extension work in agriculture, having been appointed supervisor of the Cornell Farmers' Reading and Winter Course in Agriculture.

'99, M. S. in Agr.—H. C. Price, '97 B. S. in Agr., Ohio State University, who was professor of horticulture in Iowa Agr. College, has been called to take Professor Hunt's place as dean of the Ohio State University College of Agriculture.

'02, Sp. in Agr.—Floyd S. Barlow spent two years at Cornell, and is now farm manager for A. C. Chase, South Onondaga, N. Y. He was married at Syracuse on October 15, to Sarah Estella Bedell, daughter of Mr. and Mrs. Milton J. Bedell of Syracuse, N. Y. Mr. and Mrs. Barlow will be at home after December 1st at Chase Farm, South Onondaga, N. Y.

'02, M. S. in Agr.—James Alfred Foord, '98 B. S. New Hampshire Agricultural College. Mr. Foord was Professor Wing's assistant in animal industry and dairy husbandry from 1901 to 1903. He is now professor of agriculture at the Delaware College, Newark, Delaware, having been elected to the position September 1, 1903.

'03, Sp. in Agr.—John W. Illston has been appointed State Milk Inspector, and will make his headquarters at Ithaca. Mr. Illston is one of the most enthusiastic supporters of the CORNELL COUNTRYMAN, and last year was the first to subscribe for a share in the paper.

'03, Fellow in Agr.—Thomas C. Johnson, '96 B. S. in Agr. and '00, A. M., University of West Virginia. Mr. Johnson received his appointment in September, and is now professor of horticulture in his Alma Mater. He was to have been editor of the COUNTRYMAN had he staid at Cornell.

'03, B. S. A.—Edwin J. Glasson left last August for Florida in the employ of Cosgrave Bros., of Pittsburg, Pa., who have lands at Dania, Dade county, Fla. The Cosgrave Bros. are setting out citrus and tropical fruits, and have also put in a large acreage to tomatoes. Mr. Glasson's address is "Dixie" Plantation, Dania, Dade County, Florida.

'03, Sp. Agr.—Avery O'Brien, died at Saranac Lake, N. Y., on July 17, 1903. He was the son of Dr. W. D. O'Brien, of Pittsburg, Pa. He enter-

ed Cornell in the fall of '02 as a special with the intention of changing later to the regular course in Agriculture. He left Ithaca in February with the fever, and for two months was on his father's farm in Maryland. In his weak condition he contracted consumption, and not improving on the farm he was sent to the sanitarium at Saranac Lake, but other complications set in, and he died July 17.

The *Alumni News* of Oct. 21, '03, contains the following about William M. Morgan, '02, B. S. A.: "Mr. Morgan died on July 6, '03, at Morgantown, West Virginia. He was 27 years old, and at the time of his death was assistant horticulturist at the Experiment Station, and teacher in botany in the University of West Virginia."

CLASS OF 1901

B. S. A.—Eugene M. Baxter taught Agriculture in the Belleville Union Academy, N. Y., until September, 1902, when he was recommended by Professor Roberts, and was appointed for three years at a salary of \$3,600 as superintendent of the Agricultural Schools and Experiment Stations in the Argentine Republic.

Sp. in Agr.—Frank M. Cockburn is well remembered by every man in agriculture three years ago. He became farm superintendent of the George Junior Republic, at Freeville, N. Y., and raised the farm practice of the Republic to a high standard. He left Freeville early this year for a better position at Lyman's School, Westborough, Mass., where his time is equally divided between the teaching and practice of agriculture.

Sp. in Agr.—Claudius Cole took the short course in agriculture in the winter of '02. He has just finished testing some cows at W. W. Cheney's, Manlius, N. Y. His address is R. F. D., Romulus, N. Y.

Sp. Agr.—Frank D. Curtis changed to special in forestry.

Sp. Agr.—Harry S. Curtis is now growing the famous Dade County tomato at Miami, Florida.

B. S. A.—Ralph W. Curtis is studying for an M. S. in Agr., and is on the editorial staff of the *CORNELL COUNTRYMAN*.

B. S. A.—Bryant Flemming is with Manning Bros., landscape architects, Boston.

B. S. A.—Harry M. Knox is with the Patrons Fire Relief Association, St. Lawrence County, N. Y. He attended the National Grange Convention which met last month at Rochester.

B. S. A.—Edwin J. Kyle, '02, M. S. in Agr., is now professor of horticulture in the Texas Agricultural College. He sends regards to all his Cornell friends.

Sp. Agr.—D. M. McLaury is president of the Northern and Southern Company, dealers in lumber, located at Cornell, Marion County, Fla. Martin J. Roess, '03, A. B., is secretary and treasurer of the company, and E. C. Welsh, '02, Sp. in Agr., is a part owner.

M. S. A.—J. C. MacDonald is a graduate of the University of Minnesota. He received his master's degree at Cornell in 1901, and is now editor of the *Transvaal Agricultural Journal*, conducted by the Department of Agriculture of Pretoria.

M. S. A.—Adams Phillips is probably at Thornton, N. Y. Perhaps we can provoke a correspondence by quoting his "write up" in the 1901 Class Book. "Adams Phillips was prepared at the Fredonia Normal School. He has been successful both in his studies, and with the ladies, and it is reported that invitations will soon be out for the happy event. Stimulated by the prospects of a happy home he has finished his course in less than three years, and will manage one of his Pa's farms in the western part of the state."

Sp. Agr.—Percy Proctor, jr., was drowned in Cayuga Lake on July 27, 1901.

Sp. Agr.—F. H. Richards is well remembered both in '01 and last year when he came back after his successful canvassing trip through England. He is now in the employ of the Vermont Farm Machine Co.

B. S. A.—Roger M. Roberts is in business in San Francisco. He married Miss Daisy Fredricks of New York City, who was at Ithaca in the summer of 1900 attending Cornell's nature-study course. Mr. and Mrs. Roberts are residing at Palo Alto.

Sp. Agr.—Alonzo La Verne Roe was farm manager at Waterford, N. Y., but is now at the Walker Gordon Laboratory, Plainsboro, N. J.

B. S. A.—Spencer Roe was prepared for college in the Wolcott High School, and after teaching three years entered Cornell in the fall of '97. Losing his health in the winter of 1900 he left for the West within a month of completing the work required for his degree. On January 17, 1901, he died at Redlands, Cal. He was well known in his department of the University, and was honored and loved by his many friends.

Sp. Agr.—Joel C. Rogers, '90, B.S., Battle Creek College, is now instructor in agriculture and horticulture at the Cedar Lake Industrial School, Vassar, Mich.

B. S. A.—Arthur G. Ruggles was assistant in histology in professor Gage's department, but is now assistant entomologist of the Minnesota Experiment Station.

Sp. Agr.—A. H. Sagendorph is a farmer and Guernsey breeder at Spencer, Mass.

Sp. Agr.—Boyd Delos Staley was one of our colored students, and won friends of all who knew him. We have heard indirectly that he died some time ago, but so far have learned nothing definite.

Sp. Agr.—Grace M. Stanyon is stenographer in Professor Hunt's office.

M. S. in Agr.—A. W. Stubenrauch, '99, B. S., University of California. Mr. Stubenrauch held the fellowship in agriculture during '01, and after leaving Cornell accepted a teaching position at the University of Illinois. In the spring of '02 he was appointed state inspector of the Agricultural Experiment Stations of California. He later accepted an instructorship in horticulture at the University of California, and is still holding this position.

B. S. A.—John B. Tiffany is a senior

in the Veterinary College.

B. S. A.—William B. Tooley is on the home farm at Raceville, N. Y.

B. S. A.—Gilbert M. Tucker, Jr., is in the office of the *Country Gentleman* at Albany, N. Y.

B. S. A.—M. M. Underdown, '02, M. S. in Agr., is in agricultural work at Piracicala, State of San Paulo, Brazil. "M. M." holds the following enormous official title—Director of Model Fazenda connected with the Luiz de Queros School of Agriculture. Mr. Underdown writes that American methods are coming more and more into use, and that in Brazil there are opportunities for rapid advancement for properly equipped graduates of American agricultural colleges. It was through Mr. Underdown that Alfred Hammar, a Swedish student who was in the employ of the Government Zoological Department of San Paulo, came to the U. S., entered the College of Agriculture this fall, and is now studying in Professor Comstock's department.

Sp. Agr.—William E. Underdown is back on the home farm at Taughanock Falls, N. Y.

B. S. A.—Delos L. VanDine is still entomologist at the Hawaii Agricultural Experiment Station. He recently published a bulletin on "Insecticides for Use in Hawaii."

B. S. A.—George H. West is at Reber, N. Y. Recently he was supervising some milk tests for Prof. Wing.

Sp. Agr.—Mary Williams is now the wife of G. D. Brill, '88, who is mentioned above. We have just received news of the arrival of a daughter in the family.

As yet we have not heard from the following 1901 men. Anyone knowing their whereabouts will help us greatly by writing at once:

Ex. '01, B. S. A.—John A. Bluford. Specials in Agriculture: C. W. English, G. M. Keller, N. D. McLeod, R. B. Mathews, A. Millerd, E. W. Myers, O. C. Pratt, R. W. Reed, W. A. Reinhold, C. C. St. John, E. H. Sowards, I. G. Staneff, Jeko Staneff, H. S. Stone, B. C. White, G. M. Taylor, N. Taylor, L. H. Williamson.

PRIME COTTON SEED MEAL

Is the best and most profitable
food for cattle and sheep

Reports from the principal Agricultural Experiment Stations show the great value of Cotton Seed Meal for feeding. The farmer gets back the cost of the Meal in the increased value of manure for fertilizing purposes. It is of special value in feeding milch cows.

It Makes

**More Milk
Richer Cream
Firmer Butter**

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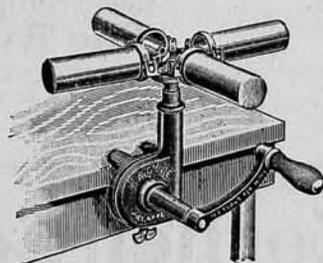
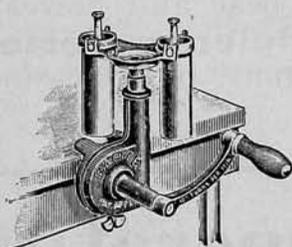
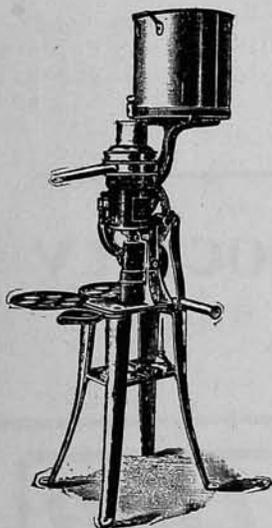
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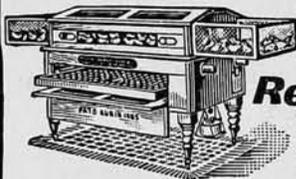
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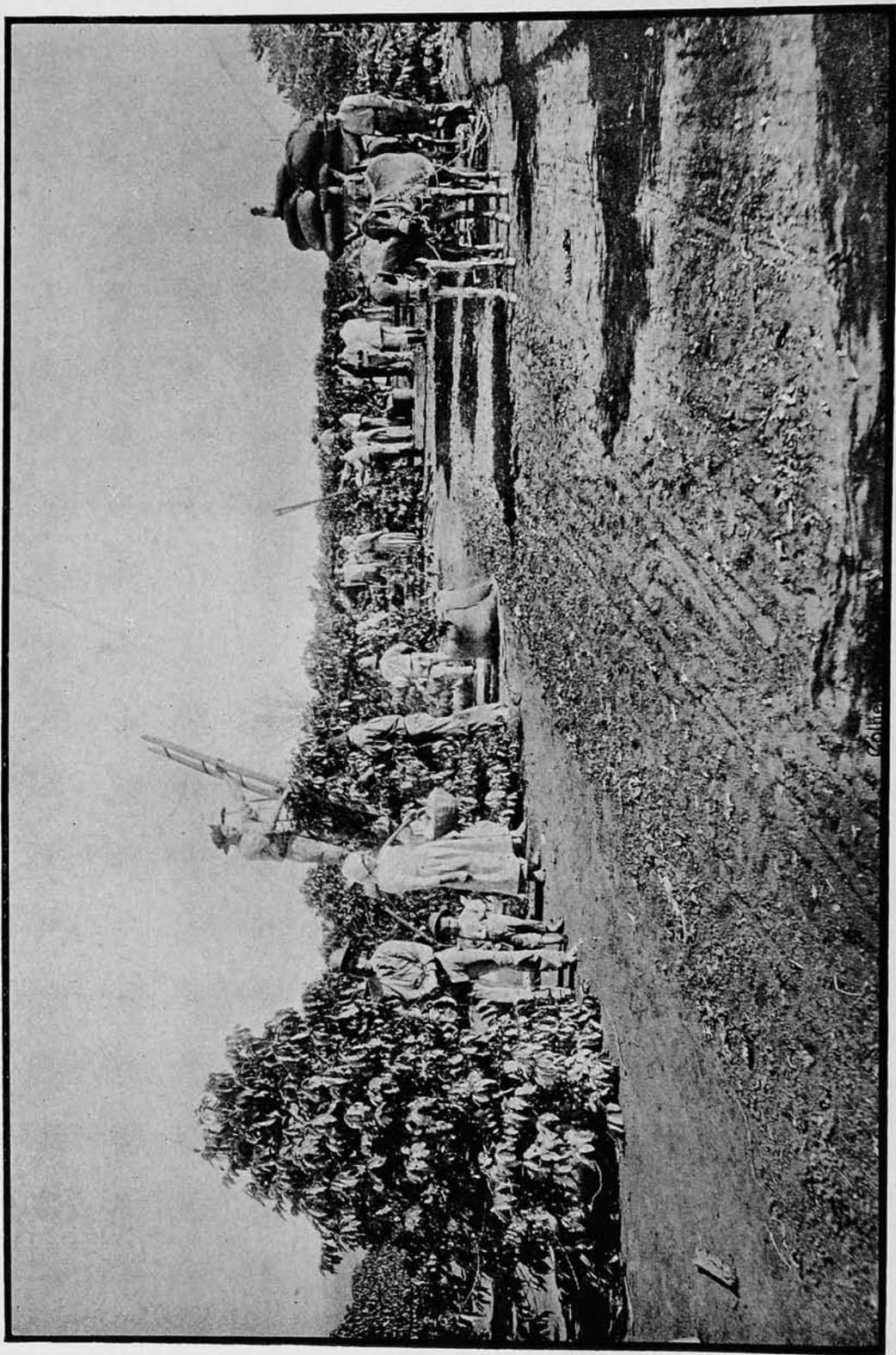
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PICKING COFFEE IN BRAZIL (SEE PAGE 41.)

THE FARMERS' READING COURSE MOVEMENT

1. THE POINT OF VIEW

By S. W. Fletcher

Supervisors of the Cornell Farmers' Reading Course

THE dominating spirit of the times is the spirit of altruism—an unselfish interest in the welfare of others. Most unfortunate is the man who looks out upon the world of to-day and sees only its selfishness and greed. More than likely he has the distorted vision of one whose knowledge of the world is gleaned chiefly from the columns of our daily press, with their nauseating details of crime, scandal, corruption, sordidness—all that is unlovely in life put in, colored and amplified; all that is sweet and unselfish left out. We hear much about “grinding trusts” and “soul-less corporations.” Somebody takes pains to tell us that the law of competition which governs business the world over, is “Get the most you can and give the least you must.” We hear that the poor are taxed by the rich; that the weak are oppressed by the strong. In the opinion of many of these lack-lustre eyed, vinegar-faced philosophers, as life is becoming more strenuous, it is also becoming more selfish.

This is true only in part. In spite of the strong currents of selfishness which are set in motion by the fierce competition of our modern industrial system, there are stronger counter-currents of unselfishness. It is not egotism which leads us to believe that never before have men and women been so generally concerned about the welfare of others. Like the Jewish lawyer many centuries ago, they are asking the Great Altruist, “Who is my neighbor?” and are trying to follow the teaching of the parable which He gave in reply. Never has there been so little of sect and caste; so much of fellowship and brotherhood.

This growing spirit of altruism is

manifest not only in persons but also in communities and peoples. The wonderful development within the past few decades of free schools, free libraries, free hospitals, free museums and other public institutions for promoting the happiness and usefulness of the people, has no other significance but that the public conscience has been quickened to a sense of its responsibility toward the individual. Never has the body politic taken such a sympathetic interest in the welfare of the individual. This is not the growth of paternalism or of socialism. It is the growth of the idea of universal brotherhood. This idea is nearly 2,000 years old.

Education has been touched by the altruistic spirit. For centuries the door of knowledge was jealously guarded by monks and doctors. Only the rich and influential, that is, the few, might enter therein. Is it very long since the days when there were considered to be but four “learned” professions—law, medicine, theology and teaching? How many are there now? One by one the barriers are being broken down and the common people are entering into the possession of their birth-right—the right to expect and to receive training in any legitimate vocation which they desire to make their life work. The establishment of the Land Grant Colleges of Agriculture and Mechanic Arts was a signal advance toward the realization of this ideal. These institutions have done more to democratise education than any other single factor, and their influence will continue to be exerted along this line until every industry in which men and women are engaged has been put into pedagogical form.

But the fact remains that the vast

majority of people do not go to colleges or training schools. Many cannot; a much larger number will not. Because they either cannot or will not, does our responsibility towards them cease thereby? It is the old, old question, "Am I my brother's keeper?" Shall we say to the ambitious young man, who is so bound by home ties or other circumstances that he cannot go to college, "My lad, you are most unfortunate. We are very sorry for you," and go our way? Shall we say to the unambitious young man, whose early training and environment has been such that he has no desire to bring into his life the beauty and power of education, "Very well, sir. If you prefer to remain in ignorance it is your fault, not ours, and you must suffer the consequences?" The spirit of altruism in education leads us to try to help each of these men. If they cannot or will not turn to the light we must carry the light to them.

The altruism which has seized modern education is expressed in many ways. The Farmers' Institute is one way; the Home Education work of our State Library is another. Perhaps it is best illustrated in what is called University Extension Teaching—literally an effort to extend the inspiration of University teaching to those who cannot attend the University. Some Extension Teaching is conducted by means of public lectures; some by means of reading courses; some by means of personal visitations. There is Extension Teaching in the Arts, in Literature, in the Sciences, and there is Extension Teaching in Agriculture.

The Farmers' Reading Course movement is a part of the University Extension Teaching in Agriculture. Of all people the farmer is the hardest to reach in Extension Teaching. This is not because he is less eager to learn than other people, but because he is a conservative. The nature of his work and the comparative isolation of his life tend to make him tenacious of established ideas and slow to accept innovations. Farmers are the great conservative element in our body politic. So it was only natural that the early efforts in the extension of agricultural

education were viewed with suspicion by many farmers and with derision by others. But all of this is passing away. We hear less and less about "book-farming." "Scientific farming" and "practical farming" are merging so rapidly that they will soon be synonymous terms.

Extension teaching in agriculture is of far greater importance than extension teaching in any other subject, not only because agriculture engages the attention of so many more people than any other industry, but also because such a relatively small number of farmers are so situated that they can attend agricultural training schools or colleges. The attendance at most of our agricultural colleges is rapidly increasing, and one does not need to be unduly optimistic in order to predict that before the end of this century the agricultural course will be as largely patronized as any other course in the curriculum; but even then, most farmers will never see the inside of college walls. They must be reached by extension teaching. As children they must be interested in the natural world around them; in birds, flowers, stones and the majestic procession of the seasons, so that they may learn to love country life and the environment in which they are placed. This effort has been called nature study. As lads, they should be shown something of the wonderful alchemy of the soil, how plants eat and drink: how the farmer prospers only when he questions the soil and studies the plant. This type of effort is being introduced as "Elementary Agriculture in the Public Schools." As men, they should be brought into touch with the vital problems of their profession (I use this term advisedly) by means of Farmers' Institutes and Farmers' Reading Courses.

The Farmers' Reading Course movement, therefore, is best interpreted from the point of view of altruism. It is but one feature of a general tendency in modern education. It is not conducted for political effect. It has the ring of earnestness and unselfishness. The men who have been identified with it have put their heart into

the work, and, in most cases, have not expected or received any recompense except the joy of service. The extension movement, of which it is a part, is bound to grow, because it is the ex-

pression of a truth which must some time possess the world—a truth to which a wise man once gave concrete form in the words, “We that are strong ought to bear the infirmities of the weak.”

IRRIGATION IN HUMID DISTRICTS

By E. B. Voorhees

Director of the New Jersey Experiment Station

THE question of irrigation in the humid districts has recently assumed considerable importance, and is probably due chiefly to two causes, first, the general discussion of the subject of irrigation, as a result of the action of the National Government in providing for the irrigation of certain public lands in the arid regions; and, second, to the fact that in the eastern sections of the humid districts there have been very radical changes in the character of the farming. Extensive systems of farm practice, in which cereal grains and hay have been the chief crops, have changed to more intensive systems, in which market garden crops and small fruits are more generally grown. The effect of lack of moisture, due to short periods of drouth, is more noticeable in the case of these quick-growing crops of high commercial value, than for those whose periods of growth are longer and whose value is lower, though possibly the relative effect would not be far different.

The Amount of Rainfall Not a Guide as to the Need for Water.—It has been shown, that while the rainfall in the humid districts is on the average sufficient to meet the demands of vegetation, it is not altogether a question of actual rainfall, but a question of its distribution and character. That is, if the total rainfall of these districts were so adjusted as to have the precipitation at the proper time, and in such a way as to enable it to be entirely absorbed by the soil, there could be no question as to its complete efficiency, but the rain that falls during the summer months is often of little service; the dashing showers do not readi-

ly penetrate the soil when hard and dry, and a large proportion runs off the surface and is lost. Thus the statements of annual rainfall, of monthly rainfall, or even of that during the growing season, are not safe guides as to possible utilization in crop-growing. In a large percentage of years, there are longer or shorter periods during which the deficiency of rainfall is serious, and in every year there is usually one or more crops of the wide number now grown, that materially suffer from lack of sufficient moisture at the right time. A slight deficiency of water at critical periods in the growth and development of these high-class crops is often disastrous, and these short drouths are of very common occurrence in our humid districts.

Difficulty of Establishing Irrigation in Humid Districts.—A difficulty met with in irrigating in the humid districts, is that the amount of water required in addition to that annually precipitated is not readily determined, because of the variations in the annual precipitation, as well as in the character of it, that is, whether evenly distributed throughout the growing season, or whether in heavy storms in which case the excess is carried away. In certain years, very little additional water may be required, while in certain others a very large amount, thus the problem of water requirements is a much more complicated one than in the arid regions.

Another matter which prevents active interest in the irrigation question by those directly affected, is the inherited tendency to let well enough alone, and to take the chance upon

having a sufficient precipitation for the annual requirements. Hence, the adoption of any system of storage and distribution, which is based upon a careful study of the water requirements and the gains that may be derived from an abundant supply, does not meet a ready support, and capital for the building of storage reservoirs and distributing canals is not easily obtained. In the arid regions, the case is different; there is no element of chance; without water, nothing can be grown, and hence when it can be shown that water can be obtained, capital is ready to venture, but in the East any scheme of irrigation involving considerable expense is not likely to meet with approval until the farmers themselves take the initiative and show that such investments will prove profitable. It is for this reason too, that the experimental inquiries concerning irrigation in these districts have been carried out in a small way. When the work has been done, plants have been installed at a small expense, and the areas covered were relatively small, but these experiment plants have shown that irrigation is a very profitable undertaking.* There are now a considerable number scattered throughout the market garden districts, near the large cities of Boston, New York and Philadelphia, and throughout Long Island and New Jersey. These plants, costing from \$200 to \$2,000, are capable of providing for the needs of areas ranging from 2 acres up to 20 or 30, and the water is obtained from wells or streams, and pumped direct to the land or into reservoirs, and distributed as needed. In many cases in the vicinity of cities, the cheaper method is to obtain the water direct from the city supply, in which case the water is purchased only when needed, and there is no initial expense for plant, or for depreciation in value. Those who irrigate, state that they would not farm without a guarantee of water and regard it as their best and cheapest insurance.

Methods of Practice.—In irrigation in the eastern districts, if full duty of the water is to be obtained, the land upon which it is to be applied should be carefully prepared and measures

taken to conserve, not only the natural, but the artificial supplies. The character of the soil and subsoil, the distance of the ground water from the surface, and the slope of the land, are all factors to be taken into consideration, and both the method of application and the quantity used should be adjusted to meet these conditions. It must be remembered, that in these eastern soils, water is not the only requisite as is the case in the arid districts. The ground must first be made fertile, and because of the larger crops consequent upon irrigation, there will be a greater necessity for supplying fertilizing materials than if the crop fails for lack of water once in two or three years. The time of applying the water, is also a matter of considerable importance in these districts, for it is quite possible to ruin a crop by excess of moisture due to the application of too large quantities previous to a large precipitation of rain. The amount of rain and the time of the fall cannot be foreseen, hence in applications in humid districts, small and frequent applications are better as a rule than thorough soakings, as is the practice in the arid regions. This tendency to injury from irrational applications of water, is due both to the character of the crops usually grown under irrigations, and to the climate. The application of a large amount of water, followed by a storm of two or three inches of precipitation, and this followed by damp, muggy weather, frequently results in encouraging the rapid spread of blights, diseases, rots, etc., which prove quite as disastrous as a deficiency of water. This is particularly true in the case of melons, potatoes, cucumbers, tomatoes and other high-class market garden crops. It would not be the case, at least, not in such a degree, with cereal crops or grasses. In the work, therefore, the attempt should be to keep the land moist. That is, begin irrigation before the soil gets dry, and add sufficient water to keep it moist. This, of course, is more expensive than a thorough soaking, but danger of injury is avoided.

*See Bulletins Nos. 36 and 87, Office of Exp. Sta. Dept. Agr., Washington, D. C.

THE COFFEE INDUSTRY IN BRAZIL

By E. Fagundes, '05

COFFEE belongs to the immense tropical family (Rubiaceæ) to which also belongs the Peruvian bark tree. It is probably a native of Arabia or Abyssinia. Its name was given by the Arabians.

Not much is known of the history of the coffee tree. The Greeks and Romans were not acquainted with it, and it is doubtful whether in its native country it was known before the fifteenth century. Toward the end of the seventeenth century some trees were taken by Wieser to the Botanical Gardens of Amsterdam where they were planted, and from whence a tree was obtained by the Paris Botanical Gardens. From this one those found later in Martinique were obtained, and it was not long before all the West Indies could be supplied with trees from that country.

About 1742, coffee was introduced into Brazil, where, owing to the condition of the soil and climate, it was soon seen that a large crop could easily be obtained. Everybody that could began to plant coffee, and its growth was so rapid that to-day Brazil produces the largest part of the world's coffee crop.

The following table, furnished by the Bureau of Agriculture in San Paulo, Brazil, shows the total annual production of coffee for the coffee-producing countries, counted in bags of 60 kilograms (about 132 pounds):

	1880-'90	1890-1900
Brazil	11,000,000	14,840,000
Venezuela, Colombia, Mexico, West Indies	4,575,000	6,370,000
Asia	3,810,000	2,085,000
Africa, Arabia.	235,000	398,000
Total	19,620,000	23,693,000

We have reason to think that the different climates to which the coffee was carried had some effect on its quality, for we find that the coffee from Arabia, the Mocha, has a small, gray to greenish bean; that from Java

or the West Indies, a large yellow bean; that from Jamaica is of medium size, and the bean is greenish; the Bourbon is small, yellow, almost white; the Surinam has the largest bean of all the varieties, but is of about the same color as the Bourbon.

In general, all the varieties grow more or less well in Brazil, but experience has shown that the Bourbon is the best. It lives longer and produces a large crop every year, so that one can depend upon it. The coffee tree grows very well in a place where the temperature ranges from 60 to 90 degrees Fahrenheit. In most parts of Brazil it grows better on high land, at from about 1,830 feet above the sea level, to not much above 2,440 feet. It has been found that the temperature between these heights is the one best suited to the tree, for when planted above the upper limit the frosts will kill it, and when planted below the lower limit, it grows accustomed to a higher temperature which is not the one best suited for the plant, and is, therefore, easily killed by a light frost. The plant likes a very rich soil full of organic matter. A heavy, well drained, loamy soil with some coarse gravel is ideal. Where this cannot be obtained a sandy or gravelly loam does fairly well, bearing uneven crops for not more than forty years. In an ideal soil there have been cases where the plant has reached an age of from eighty to a hundred years.

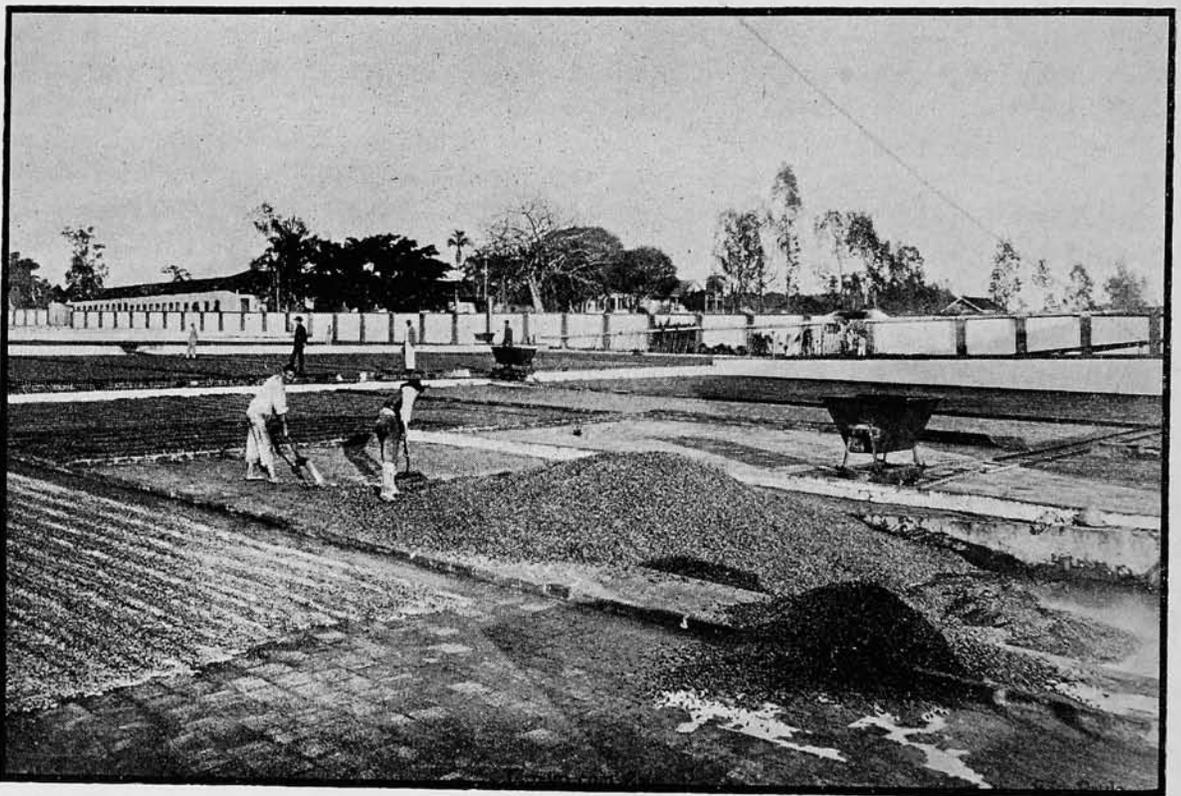
In many plantations the trees are set at the corners of squares of from 10 to 12 feet on a side, but some prefer planting them at the corners of triangles instead of squares. The most common way of planting is from the seed. These, five in number, are placed in a hole one foot square, one seed at each corner and one in the center. They are then covered with about two inches of earth and protected by a wooden crate laid over the holes. The young plants are protected from light frosts that occur on low ground during the winter, by further covering the wood cases with straw or brushwood.

The plantation is kept free from weeds. The dead plants are replaced by others from the nursery, which is a shady, moist place in the woods, where seeds are sown and allowed to grow promiscuously. After two years of protection they are uncovered, for they are then strong enough to stand any slight change in the weather.

In Arabia the wild tree attains a height of 15 to 25 feet, but under cultivation it seldom exceeds 10 to 15 feet. A tree one year old is about 20 inches tall. It attains its maximum height at about six years.

The dark green leaves and the small,

then at its busiest, and one can see many families of laborers harvesting the fruit. A cloth is spread under the tree, and the hand is run from about the middle towards the outside along the branches bearing fruit, care being taken not to injure the leaves at the tips of the branches. From the cloth the fruit is carried in carts to the drying yard, where it is spread out on flat ground or, better still, on cement yards. Here the fruit is dried by the action of the sun's rays, it being frequently turned over so as to dry evenly. When the drying process is about half complete, the coffee is



DRYING COFFEE

snow-white flowers form a very pleasing sight en masse. When going through the coffee regions of Brazil, the traveller's eye is delighted for hundreds of miles by the only snow he can see in that country—the flowers of millions of coffee trees. These give a splendid picture of a field covered with snow ten to fifteen feet deep. At other seasons the trees are covered with a luxuriant dark green foliage, making an entirely different picture. Later the berries begin to show, and it is not long before they are of a dark scarlet color, and are ready for picking. They ripen in February. The plantation is

placed in cement tanks filled with water, so that all impurities are removed. From these tanks it is again taken to the yard where it is left until thoroughly dry. Where the soil is heavy and compact, the fruit is allowed to fall to the ground when picked, and left there for two or three weeks, whence it is taken to the drying ground and run through the process above described. After the second drying, it is run through several mills, which remove the skins enclosing the seeds or berries, and assort the grains according to size, form and weight. It is then shipped in bags of sixty kilo-

grams to the several seaports for exportation.

Coffee, as well as many other articles on the market, is subject to a great deal of adulteration. Chicory is generally used for the adulteration, as it is not injurious to health. Any one can easily detect its presence, because it unduly darkens the color of the beverage. Sometimes roasted corn or beans are used instead of chicory, but these are still more easily detected, for they effect the taste and aroma. In Sumatra the coffee leaves are used instead of the seed for making the beverage. They are prepared in a manner similar to that employed with tea leaves

When roasted, coffee loses 15 to 25 percent in weight, and gains 30 to 50 percent in bulk. It should not be roasted after it attains the brown color that is sufficient to bring out the delicious aroma and other qualities. If the roasting is carried on further, more or less charring results, and a disagreeable burnt odor is produced. For use it must be ground to a very fine powder; for only then can it give out all its aromatic oil and almost all the nutritive substances to the hot water. The beverage can be prepared in many kinds of apparatus, some of which are of rather intricate structure. The best ones are those that give the strongest beverage and at the same time keep it free from all sediment. Coffee with a sediment is not considered good by the

Brazilians, who, as a rule, are great coffee drinkers.

In the tropical countries coffee is usually drunk pure, as a strong, black liquid; but it is also used with milk—three parts of the latter to one of coffee being a good proportion. The milk and the coffee are mixed and boiled for some minutes producing a much better beverage than when the milk is added immediately before serving.

A much quicker and better method is the one known in Brazil as the coador method, and in the southern United States as the drip bag method. It consists in passing boiling water over the coffee which is in a cotton bag, and allowing it to drip slowly. The beverage made in this way possesses more flavor and aroma than when made in machines or by the common way of boiling the coffee and water together.

In almost every city in Brazil several coffee houses are found, which sell the beverage by the cup at any time of the day and at almost any time of the night. Here it is dealt out according to the popular formula—"as black as ink, as sweet as love, and as hot as —." At night the sound of an orchestra is heard. Only the middle and higher classes of people are to be found in these houses. They make very convenient places for the people to meet and discuss politics, while they enjoy their favorite beverage.

THE NEW TREATMENT OF MILK FEVER IN COWS

By James Law

Director of the New York State Veterinary College

THIS affection has been a steadily growing evil among dairy herds of advanced milking breeds, becoming not only increasingly prevalent, but more and more fatal, so that it has become justly a cause of dread on the part of the owners of valuable stock. Its intractable course and uncertain nature have led to the promulgation of a variety of theories of its pathology, and to the designation of it by a number of different names. In England it has

been known as *puerperal fever*, and *parturient fever*, and, better *parturition fever*; in France and Germany as *calf* or *calving fever* (*vitulary*), again as *parturient collapse*, *calving paralysis*, *calving paresis*, *calving coma*, *parturition septicaemia*, *parturition eclampsia*, etc.

Theories of Causation and Nature.

As the disease follows easy parturitions (not severe ones) Contamine attributed it to the surplus of nerve force, which was not used up in calving, and now makes a sudden

explosion. The partial bloodlessness of the brain is attributed by Billings to the contraction of the cerebral vessels under the exaggerated excitability of the uterine nerves. But the womb in such cases is in a condition the opposite of excitable. Hanbner attributes the bloodless brain to the accumulation of the great mass of blood in the now empty and flaccid abdomen. But the womb usually contains little blood, and the bowels (portal system) are not specially congested. Franck ascribes brain anæmia to excessive plentitude of the elaborate arterial network at the base of the brain (*rete mirabile*), the swelling of which drives the blood out of all other structures inside of the closed box of the cranium. But ewes, goats and sows have equally elaborate *rete mirabilia*, yet milk fever is unknown among them, or in the males even of cattle, in farrow or even in breeding cows, apart from the period of calving. Barlow, Kohne, Carsten Harms, Binz, etc., invoke an impairment of the function of the ganglionic nerves, and a failure of conductivity of nerve force, which is purely speculative as a primary or main cause. Violet, Sanson, Campbell and others look on it as essentially a congestion of the nerve centers, while Muller and Trasbot allege inflammation of the same parts.

Apart from all such attempts at explanation on hypothetical bases, there are certain facts, that have been recognized for a great while, and which no speculation can controvert; and any doctrine of the disease, which shall stand criticism must harmonize with these indisputable facts.

Milk fever is peculiarly a disease of heavy milking cows, and no other class of animal has been bred up to the same exalted standard of great power of digestion and assimilation, and enormous yield of milk. The disorder is virtually unknown in scrub or common herds, while it is common and deadly in the great milking breeds—Holstein, Guernsey, Jersey, Alderney, Dutch, Flemish, Ayrshire, Swiss, Norman, red polled and milking short-horn.

Again it is unknown with the first

or second calf, and becomes increasingly rare as the animal passes its maximum of milk yield and enters on the stage of decline. From six to ten years of age furnishes by far the greatest number of cases.

Heavy and rich feeding prior to and just after calving renders the disease relatively common and destructive, and hence the affection can be to a large extent warded off, by starving for a fortnight before and a week after calving.

All of these conditions operate toward one end, a suddenly induced plethora in the calving cow, and this is further shown in the small size of the blood globules, which implies a dense rich condition of the plasma in which these float. The sudden contraction of the womb after the birth, and the more speedy secretion of the water than of the solids of the blood tend to the further concentration of this liquid. Plethora therefore, both as regards excess and richness of blood, is one of the most marked and essential conditions of milk fever.

The *absorption of toxic matters* has been growing in favor as an explanation. Lafosse thought poisons were absorbed from the womb, Adadie and Kaiser from the intestines, Hartenstein from the overworked muscles, Allemani and Gratia from the udder. But the womb shows less putrefactive change in its contents than after a difficult and assisted parturition, and the muscles are greatly more overworked in prolonged, obstructed and painful calving, than in the easy one in which milk fever habitually occurs. There seems therefore a strong probability that the source of the poison is to be found, if at all, in the udder.

It has been strongly suspected, though not yet proved, that the source of the poison is a microbial ferment and microbes are not uncommon in the milk ducts apart from this disease. The probability of a microbial origin is greatly favored by the fact, as noted by Bissauge and the present writer that certain hamlets and farms habitually furnish cases of milk fever, while neighboring ones, with the same breeds and apparently the same management

escape; also, by the observation of Russell and Wortley Axe, that the malady will sometimes be suddenly arrested in a herd, by the simple expedient of having the cows moved to a new and previously unoccupied stable, for calving and the first nine days thereafter. The sudden prostration, muscular weakness, unconsciousness, and coma, are strongly suggestive of a narcotic poison of microbial origin, and the rapid and complete recoveries are equally in keeping with such theory, the poison having been presumably eliminated or neutralized in the system. Any marked structural change producing equivalent nervous disorder would make no such rapid improvement. Dangerous narcotic poisons (leucomains) may, however, be generated in the system without an invasion of microbes from outside, as when ephemeral fever follows on overexertion or when the milk becomes poisonous when unduly retained under overexertion and excitement. The suckling is often poisoned under such conditions, and everything points, as we shall see under treatment, to the origin of milk-fever-poison in the udder.

The presence of poisons in the system is further shown in the constancy with which we find *sugar in the urine* in these cases. This points very directly to disordered function of the base of the brain or liver. It should be stated that the mere presence of sugar cannot be looked upon as the cause of the milk fever, as the elimination of sugar continues for days after the cow has virtually recovered and is apparently quite well. The quantity of sugar in the urine, however, is in ratio with the violence of the attack, and therefore it is an index to the amount of the real narcotic poison produced in the system.

A wide *variation of temperature from the normal* is another indication of the violence of the attack, and its gravity. If much below the normal it implies a specially depressing narcotic poison and a probably fatal issue. A slow rise to (not above) the normal is a favorable indication. A rise above the nor-

mal usually implies inflammatory complications, in the lungs, through inhalation of food products; in the bowels; in the womb or elsewhere. All such cases are to be dreaded as the system becomes further depressed by the toxins furnished by the microbial invasion of the inflamed part, in addition to those already furnished from the udder. Such accessory infectious inflammations may well render unsuccessful the best measures of treatment

The J. Schmidt Treatment.

In 1897 J. Schmidt published his successful treatment of milk fever by the injection of the teats and milk ducts with a solution of iodide of potassium 7 to 15 grammes in 1 litre boiled water. The solution must have been boiled for 15 minutes and cooled to 40 degrees C. before injecting. The apparatus for injecting is a small rubber tube, five or more feet in length, having a milking tube fitted into one end and a funnel into the other. This is to be rendered aseptic by boiling, and kept there after in a solution of mercuric chloride (1:1000) until wanted for use. The udder and teats, the hands of the operator and assistants, are thoroughly washed with soap and water, rinsed off with boiled water, and then soaked in a solution of carbolic acid (2:100). The udder is milked empty before disinfecting, and is manipulated after the injection to force the liquid into all parts of the milk ducts.

As the result of this treatment the mortality was reduced to 17 per cent. instead of 50 or 70 per cent. under the old treatment.

The avowed object of Schmidt was to check secretion in the glands, for which iodine was especially promising. He soon advised the introduction of a little air into the udder to favor the diffusion of the iodide solution. Others went a step farther, thus Naudinat doubled the amount of the iodide solution injected, and used eserine and pilocarpine hypodermically to arouse the peristalsis of the intestines, and reduced the mortality to 5 per cent.

The Injection of Other Liquids.

The great success of the Schmidt method inspired a number of veterinar-

arians in both Europe and America to inject the udder with other antiseptic solutions, all of which proved successful in a high degree. Among the solutions injected were those of lysol, cresol, chinosol, and common salt. Finally the injection of simple water, sterilized by boiling and cooled to blood heat, proved eminently satisfactory. In the use of these injections it came to be recognized that the more fully the udder was distended the better was the result.

Injection of Gaseous Agents.

Distension of the udder by gas was now a very obvious alternative, but although Schmidt had used some atmospheric air along with his iodide solution, the idea of antiseptics had so pre-occupied the minds of the operators that for a time those gases only were used that had some antiseptic power. Kortman used etherized air with success. Oxygen got into very general use, first in Switzerland, then in London, Canada, and elsewhere, and as the quarters were well filled with the gas the mortality practically disappeared—every case recovered. The first case of the present writer, was a mature Jersey with a record of three pounds of butter daily. She was attacked within 12 hours after calving, and the case should therefore, in time past, have proved fatal. In one hour she was on her feet and by next day she had fully recovered, and has given her usual heavy yield of milk ever since.

Injection of Sterilized Atmospheric Air

Experiment had advanced so far that the conclusion was unavoidable that the value of the injection lay in its quantity rather than in its quality. The benefit came from the distension of the udder by *overfilling* of the milk ducts, and it mattered little what agent was used, provided that it was bland and non-irritating. This conclusion was strengthened by the experience of the breeders on the island of Jersey. Dealing with a paragon in the production of milk and butter, they had suffered heavy losses from milk fever, until they fell upon the expedient of omitting to milk out the udder for twenty-four hours after calving, which had at once the happiest result. The disease which

had been the scourge of high class Jerseys was at once "shorn of its terrors."

It only remained to fully distend the udder of the afflicted cow with ordinary atmospheric air, which had been robbed of its living germs by filtration, and the triumph over milk fever became easy and complete. The first case to which I applied this was a mature half-bred Holstein, which had been attacked less than twelve hours after calving, and which had been injected with Schmidt's iodide solution, yet eight hours afterward remained down, unable to rise, in a condition of stupor, and with no sign of discharge of fæces or urine. On having my attention called to the case I at once fully distended the udder with sterilized air, retaining it by means of tapes tied around the ends of the teats, and in a little over two hours she was up seeking water and even food, passing fæces and urine freely, and with bright expression of face and eyes and every promise of recovery. The tapes were now taken off, but no milking allowed until the following day, when the patient appeared to be perfectly well. Since that date she has had the reputation of the best milker in the heavy-milking herd.

This case is an example of many others in many different hands, so invariably successful that there is good warrant for the assertion frequently made, that there need be little or no apprehension of a fatal result, in even severe cases of milk fever, if they are promptly subjected to treatment. The modern treatment acts like magic and seems to hardly admit of failure.

Economic Value of This Treatment.

The economy of the treatment is very far reaching. Milk fever has long been the scourge of the best dairy herds. Not only the best herds, but the best cows in these herds suffered, and the latter were lost to the owner at the very time when they were promising the highest remunerative returns. In this way the maximum value was continually being cut down, and the herd came to be made up of the less valuable, the less productive, and the less remunerative animals. Excellence and high yield were continually being scaled down, and the more intelligent and suc-

cessful the owner might be in grading his stock up to a high standard, the heavier were his losses. Not only so, but the element of heredity has come in to restrict the improvement in the herds, and to keep this below the standard which they were justly entitled to reach under intelligent skill, selection and management. The cows that have attained to an unprecedentedly heavy yield, under judicious breeding and management would produce a larger proportion of similar high class offspring, and were the most likely to bring forth those that would excel themselves even, so that, in the absence of a serious drawback, the constant appreciation of the herd, under judicious supervision, is a foregone conclusion. But so long as great success in such improvement, was the signal for the destruction of the most valuable products, the best milking cows, by this disease, great individual advancement could only be rare, and a general advance to the highest standard became a virtual impossibility.

If, on the other hand, we can guarantee the recovery of even the most strongly predisposed animal from milk fever we have laid the foundation of a general grading up, while applied upon the dairy herds generally would increase their value to an almost incalculable extent. Every advance in excellence is a permanent gain, and as the cow of the highest standard can be counted on to live out her days, and to produce a full complement of equally high class offspring all dairy herds can soon be raised to this enviable condition.

Dangers of the Treatment and Need of Special Precautions.

We must not shut our eyes to the inevitable abuse and danger of the new treatment. The main danger is the introduction of germs into the udder, and the setting up of infective inflammation in the gland. Readers will recall the show cows in Toronto a few years ago, the udders of which were fatally infected by milk injected to make a false show in the prize ring. Already in Europe and in the hands of veterinarians the Schmidt treatment has induced a small proportion of

cases of infective mammitis. How many more such cases will develop if this treatment shall become a popular domestic resort, applied by the dairyman in all sorts of surroundings, and with little or no antiseptic precaution? This result is inevitable, but we may feel some consolation in the thought, that even so, the mortality and loss must be far less than it has been in the past, when at least half the animals attacked by milk fever died.

To obviate such dangers entirely, the treatment must be applied under careful measures of asepsis, such as are used in all work in the bacteriological laboratory. From one who has not had the privilege of such laboratory training, be he veterinarian or layman, we cannot expect perfect results, but we can at least lessen the evils by giving full instructions as to the precautions necessary.

First. Provide an elastic rubber ball and tubes furnished with valves to direct the current of air as in a common Davidson syringe.

Second. On the delivery tube place a cylinder of tin, or other metal, made in two parts which telescope within each other, making an airtight joint, and pack this cylinder with sterilized cotton. On each end of the cylinder have a projection in the form of a fine tube on which the rubber tubes are fitted.

Third. In the free end of the rubber tube leading from the cylinder, fit a milking tube to be inserted into the teat.

Fourth. Sterilize this entire apparatus by boiling for 15 minutes, and, without touching the milking tube, wrap it in a towel which has been sterilized in a water bath, or in live steam, and dried and ironed.

Fifth. On reaching the patient, draw no milk from the teats, but wash them and the udder thoroughly with warm soap suds, rinse off with well boiled (and cooled) water, and apply to the teats, and especially their tips, a 5 per cent. solution of creolin or lysol, taking great care that the teats are allowed to touch nothing until the injecting apparatus is placed in use. As the cow is usually down, the udder

may be rested on a cushion or sterilized cotton, or a sterile towel.

Sixth. All being ready the apparatus is produced, great care being taken to keep the milking tube from touching any object but the teat, and the middle of the teat being held between the finger and thumb of the left hand the teat tube is inserted into the milk duct with the right. Meanwhile the assistant manipulates the rubber ball until the quarter is as full as it will hold, when the tube is withdrawn and held by its attached end, while the teat is tied with a tape to prevent the escape of the air.

Seventh. The tube is now dipped in strong creolin or carbolic acid, rinsed off in water that has been boiled, and is used on the second teat as on the first, and in turn on the third and fourth, until all four quarters are thoroughly distended and teats tied.

Eighth. The recumbent cow is to be kept on her breast bone, and with the head elevated even if it should be necessary to pack her around with straw bundles or to suspend the head by a halter. Lying on her side is liable to develop fatal bloating.

Ninth. If in two hours the cow is not on her feet, nor looking brighter and more intelligent, if she has passed no manure nor urine, and if the air has become absorbed, leaving the udder less tense, the injection of the bag may be repeated under the same scrupulous and rigid antiseptic precautions as at first. This may be repeated later if necessary. In all cases, but especially in severe ones, it is well to keep watch of the cow for twenty-four hours, and if there is any indication of a return of the attack to repeat the treatment by udder distension.

Tenth. It is the common experience that when the cow gets on her feet or very shortly after, the bowels will move freely and the urine will be discharged copiously, indicating a resumption of the normal nervous functions, and furnishing one of the best guarantees of complete success. If such motions are wanting or limited in amount, the patient should be the more carefully watched, so that the earliest symptoms of relapse may be detected, and the treatment renewed.

Complications.

Complications must be met according to their nature. Bloating may require puncture of the rumen, evacuation of the gas and the introduction of ammonia solution or other anti-ferment. Inhalation of food-matters into the windpipe and lungs, causing bronchitis or pneumonia may demand antiseptic inhalants or even solutions, but is very liable to prove fatal. Injuries to the back or limbs may lead to a helpless condition of one or both hind limbs, which must be met according to its nature. Congestions or infections of the udder, womb, bowels, brain or other organs must be dealt with according to indications. If possible the case should be in the hands of an accomplished veterinarian, who is not only a trained bacteriologist, but a man of experience and skill in other respects. In the absence of such an one, the enormous mortality of the disease, when left to itself or treated according to the now obsolete methods, would fully warrant an instant resort to the treatment by sterilized air, even at the risk of a small percentage of complications and fatalities.



THE ONTARIO UNION

By John W. Gilmore.

The 25th annual meeting of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, Ontario, on December 7th and 8th.

This is the pioneer organization of its kind. It was established 25 years ago for the purpose of keeping the alumni of the Agricultural College in close touch with the activities of their alma mater, and with each other, and also to encourage and aid them in the continuation of their chosen lines of work. As it has grown in age and influence, the interests of the farmers of the province have been knit into the life and activities of the College until now these interests are united and all work in harmony for the advancement of agriculture.

During the past few years several organizations with similar objects have been established mainly in New York, Ohio, Illinois and Nebraska. Delegates from these organizations were invited to attend the convention at Guelph, but only the Agricultural Experimenters League, of N. Y., responded. Two speakers from the United States were on the program, Miss Martha Van Rensselaer, of Cornell, and Mr. W. J. Spillman, Agrostologist, U. S. Department of Agriculture.

C. A. Zavitz, director of co-operative experiments, reported that in 1902, 3,135 experimenters were engaged in this line of work in Ontario, while this year the number had increased to 3,845 and the work was more efficiently done. The co-operative experiment work was very satisfactory this year because of the deep interest the farmers had taken in it, and because of the training in judgment they received regarding the relation of crops to environment. Many speakers united to make an interesting and instructive program. The agricultural and economic conditions in Ontario differ materially from those in New York, and the union is working along lines somewhat different from our

work, yet is it very evident that through the agency of the experimental Union substantial and lasting good is being accomplished. For intensity of effort and harmony of agencies engaged their work is admirable.

The meeting closed Tuesday evening, when somewhere in the neighborhood of 1,000 alumni with their wives, and others interested in Ontario's agriculture, sang "God Save the King." After having partaken of a sumptuous supper seasoned with toasts, President Mills turned upon the point that the time is now ripe for the experimenters to give their attention to the development, by selection and breeding, of the crops which they have so long tested for yield and adaptation to environment. Everyone went away with the feeling that this year's meeting was the best yet.

THE EFFECTS OF FOOD UPON CIVILIZATION

In a recent address at a meeting at Palo Alto, Cal., the seat of Stanford University, Professor I. P. Roberts of Cornell University spoke of the effect of food upon civilization, showing that those nations which used the most concentrated foods, which give a reserve of mental power, have attained the highest civilization. The Americans lead the world because they use more milk, butter, sugar, fruit and wheaten bread than any other nations. The Turk, for instance, uses only one-tenth the sugar and one-fortieth of the butter that Americans use. No savage or barbarian people can be civilized until their food is improved. Neither can breeds of animals be improved without care in the food used.

Milk and butter are the most perfect foods, giving, in concentrated forms that are easy of digestion, all the elements needed. Butter, he said, is concentrated sunshine, and sunshine stimulates, as may be shown by the superior physical appearance of Californians.

Dr. Roberts showed plainly the necessity for the use of milk as food, and for the utmost care in producing and dispensing milk.—*Chicago Record-Herald.*

The Cornell Countryman

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JANUARY, 1904

Agricultural Teaching in Georgia

The present general assembly of Georgia has enacted a law requiring the elements of agriculture to be taught in the public schools. This is a step in the right direction. The majority of the people of the state earn their living on the farm, and it is only proper that the education of their children should prepare them for the life that they must lead. But there are difficulties in the way of accomplishing this. The greatest of which is to find teachers with the training that would fit them to teach the elements of agriculture.

The University of Georgia offers a three months' course of instruction in the winter, and a two months' course in the summer, to prepare teachers for this work. Georgia is abreast of the new educational ideas. She has a great problem to solve, and we are eagerly watching to see her victorious.

Crates for Shipping Apples

The high price and shortage of apple barrels this fall has caused some growers great inconvenience. In the end, however, it may prove beneficial, for it has forced the growers to ship their best stock in boxes. This form of package may seem strange to apple

growers, but it is being used more and more every year, and is sure to grow in favor. The size of the package is more convenient than a barrel, for the latter is more than the city customer wants, and there are too many apples in a barrel to carry well without bruising. Select fruit sells better in small packages.

The Chicago Live Stock Show

The Fourth International Live Stock Exposition was held in Chicago last month. This is the greatest live stock show in the world, and is said to bring more people to Chicago than any other event except the World's Fair. It is pre-eminently a show of meat-producing animals, but the interest in horses, particularly of the draft type, is increasing. Some of the best, perhaps the best, draft horses in the world were exhibited.

The very active part taken by the agricultural colleges is noteworthy. Nearly every agricultural college of the Middle West sent a large delegation of students. Some groups numbered over 100. But the colleges were there as competitors as well as visitors. The *Breeders' Gazette* says, "Championships galore fell to the bullocks from these institutions. Specifically speaking, the Shorthorn, the Angus and the grade championships went to colleges, and the grand championship and reserve also. Then four of the beef carcass prizes also fell to college entries. Remarkable things were done by college swine and sheep." In fact, some of the exhibitors are beginning to feel it a hardship to have to compete with the "impractical professors." The best thing about this showing is that it will call the attention of many a farm boy to the work of the colleges.

The agricultural colleges of Iowa,

Minnesota, Kansas, Ohio and South Dakota sent teams to Chicago to compete in judging stock. The Spoor trophy, a bronze cast of a bull, goes to the best team. The Iowa college has held this for two years. There are also \$500 to be divided among the twelve students making the best individual scores.

The Mexican Cotton Boll Weevil

The Mexican cotton boll weevil is at present one of the most discussed problems in southern agriculture. This pest came into Texas from Mexico about ten years ago and soon began to attract attention. It has since spread over much of Texas and threatens the cotton-growing industry of the whole South. Something of its importance can be seen from the fact that the state offers \$50,000 to anyone who can devise a practical means of exterminating it. A convention of some 1,200 farmers met at Dallas the first part of November to consider ways and means of averting the danger to the cotton interests.

In a letter published in *Science* Dr. Howard says that if the legislature of Texas had acted upon the advice given by the Division of Entomology in 1897, the pest could have been confined to a small area in southern Texas and possibly might have been exterminated. He also states that experimental demonstrations have shown that a fair crop can be grown in spite of the weevil. This fall a crop of from a half bale to one bale per acre was harvested from controlled land, while in adjoining territory the average crop did not exceed one bale to from six to fifteen acres.

The methods that have given best results in fighting it are, growing early

varieties and planting early, late cultivation, the destruction of the stalks as soon as the crop is gathered. The growing of other crops is also recommended, not only to avoid the weevil, but because it will pay to have a more diversified agriculture.

Meeting of the A. A. C. and E. S. One of the editors had the pleasure of attending the seventeenth annual convention of the Association of American Agricultural Colleges and Experiment Stations, held at Washington. There were over two hundred present, nearly all of whom were men having positions in agricultural colleges or experiment stations. This number was surely representative of all the different agricultural divisions in the United States. On glancing over the list of delegates, one might question whether any state or territory were not represented.

Matters that attracted much interest and discussion were Bulletin 22 of the U. S. Bureau of Soils, military education in land grant colleges, and agricultural education in land grant colleges. The much talk of "bulletin 22" was the subject of some unfavorable criticism. It evidently furnishes a large field for contention between the soil physicist and the soil chemist; for, unchallenged, it would shift the emphasis from the chemical to the physical side of soil study and operations. It had its severest critic in Professor E. W. Hilgard, who sent in an able address to be read. Dr. H. W. Wiley, chief of the Bureau of Chemistry, U. S. Department of Agriculture, told of the intelligent nature of the investigations, and of the care with which the conclusions were drawn. The opinion of the more unfavorable critics is that conclusions were too hastily

drawn, and were grounded on insufficient and particularly favoring results of investigations.

The expression in regard to military education was pretty generally to the effect that it had fallen below the standard of a few years ago; the time given to instruction being very much lessened, and the character of that instruction being inferior. What is needed is more generosity on the part of the government, and the detailing of efficient instructors. President Atherton's remark in regard to conditions is significant—that the War Department details a man for instruction in some institution, of which he usually comes to take charge. The instructor should be recognized as one of the faculty, and should understand his position among the rest.

The discussion relative to agricultural education was concerned with details and curricula very largely to the exclusion of broad principles and movements. Director A. C. True, as head of a committee, reported on methods of teaching agriculture in colleges; illustrating by many charts a very comprehensive system. Discussion on the matter of teaching agriculture in the rural schools came as a corollary to the main discussion, and many appeared only then aware that there was any movement in this regard. It seemed as if they were being pushed by the movement rather than they pushing it.

The association instructed its executive committee to ask Congress for an increased appropriation for the experiment stations. Each state now gets \$15,000, an amount much too small to meet the present needs.

The meeting evoked considerable interest; but is a question whether, on the whole, the subjects for address and discussion were usually of sufficient

general interest or comprehensive and broad enough to awaken the enthusiasm and spontaneity that surely might obtain among such men and at such a meeting.

**The New
Farmer and a
New Earth**

Again we feel inclined to express our appreciation of the *World's Work*, which is doing so much to elevate agriculture in the opinion of its many readers, and to encourage the farmer, student and experimenter.

December's number has two articles on agricultural topics. The first, "The New Farmer and a New Earth," is the beginning of a series by Professor B. T. Galloway, Chief of the Bureau of Plant Industry, U. S. Department of Agriculture. The article has a highly optimistic strain, showing the remarkable revolution which agriculture has undergone, and the immense advantages to the nation of the great improvements in ideals and methods. A profusion of pictures contrasting the new with the old, adds illustration to affirmation to convince one of the progress and dignity of farming. The man in the laboratory is given great credit and the man on the farm is commended for his adaptability and progressiveness.

It is an improved agriculture more than anything else that has made America the wonder of the world. The tiller of the soil owes his emancipation to the improved agriculture and all that it brings with it. Rice is produced on immense acreages where it was thought it would not grow, and has brought wealth to a heretofore poor country. Within the last three years Russian wheat has been grown with great success in the dry plain country of the Northwest, and this year will probably supply enough

seminola to render the heretofore large importation unnecessary. Seminola is the flour used in macaroni manufacture. Dairying and the animal industry of the South have been greatly benefited by science.

These are examples of the results of investigation and effort on the part of "men trained to see, to learn, and to do." "Agriculture is now a diversified industry. * * * The modern farmer is concerned with large areas of land. * * * The up-to-date farmer must have a system, and this must be correlated and harmonized with the surroundings." The farmer must have business intelligence as well as farming intelligence. Intuitive foresight may be successful, but it is too uncertain. "It is the man who does things, and knows why he does them, who reaches the top."

**Life in
the
Corn Belt**

T. N. Carver, professor of economics in Harvard University, writes the other article, "Life in the Corn Belt." December's COUNTRYMAN mentions Professor Carver's November article, "Corn Growing and the Corn Growers," in which he describes his trip on horseback through the corn belt. The present article deals with social and economic conditions in the corn belt.

The western farmer is observed to be well informed, especially in the politics of his state; but he lacks acquaintance with many of the essentials of culture. He is keen at buying and selling, and evinces a fair proficiency in the business and technical sides of his operations. In the corn belt we have a condition of things not usual to less prosperous agricultural sections. There the abler men stay on the farms, while the town and small city populations are made up of men inefficient physically

or mentally, and of retired farmers. A class of "tired" farmers live in the towns, and should be sharply distinguished from the "retired," who have made a success of farming. Farm life is certainly superior to town life in the corn belt.

There is no serious labor problem. "The typical farm hand is a young unmarried man, usually the son of a farmer living in the neighborhood—though frequently a foreign immigrant—who 'works out' for a few years merely to get money enough to begin farming on his own responsibility on a rented farm. Under such conditions it would be manifestly impossible to organize a successful labor union among farm hands. * * * This scarcity of farm labor, however, in no way interferes with the success of corn growing." Riding plows and other machines make it possible for small boys and even girls to accomplish a great deal of the farm work. "On a typical corn farm there is no season which is pre-eminently the busy season, unless the corn-plowing has fallen behind because of wet weather." Corn is recognized as the most profitable crop; but, since with a given labor force only so much corn can be grown, and there is need of no more labor force to grow several other crops in addition, wheat and oats are grown considerably. "Thus the farmer in the corn belt has practically eliminated the labor problem." There is practically no problem of domestic service. "Every farmer's wife expects to do her own work."

"As applied to country districts, the great question is—and it is by far the most important and far-reaching question relating to rural life in America—can we ultimately develop a rural population with a high standard of living; or must the land continue to pass into the hands of a population with a low

standard of living, but great industry? This is a question which goes to the very foundations of American civilization. Upon its answer depends the question whether the rural districts—the great seed-bed of our population, or of any population, for that matter—shall be the home of a cultured, progressive, liberal-minded people, or of a 'peasant-minded' people.

"The corn belt is the most considerable area in the world where agriculture is uniformly prosperous. This prosperity is, moreover, healthful and natural. * * * The people engaged in the corn-growing industry are an independent, progressive class, drawing their sustenance from the soil, and not from other people."

Dr. Carver received his Ph. D. at Cornell. While a student here, he rowed on the crew.—Editors

GENERAL AGRICULTURAL NEWS

The University and Experiment Station of Wyoming has received as a gift from the State Board of Charities the penitentiary buildings and farm in Laramie. This adds to the college and station equipment a farm of 320 acres, situated on the Laramie River, and buildings costing originally about \$100,000.

* * *

The new live-stock and grain-judging pavilion at the Iowa College is nearing completion. It is an octagonal building, built of pressed brick and two stories high. The lower floor will be used for animal husbandry work, and the upper floor for the judging of and demonstrations upon corn and grain. The building will cost when completed about \$15,000.

* * *

The special course in Agriculture, which has been given at the Scientific School of Yale University for twenty-five years, has been discontinued on account of the retirement of Professor Brewer.—*Science*.

The Idaho College and Station has decided to add an agronomist to its staff to take up work in plant breeding and soil physics. A bacteriological laboratory will also be established.

* * *

The Iowa Agricultural College offers a two weeks' course in judging, feeding, breeding and management of live stock, beginning January 4. The work is intended for busy men who cannot take an extended course in agriculture. This is the fourth year that it has been given. It has proved so popular that accommodations have been made for 1,000 students. One of the features of the work is a slaughter test in which animals representing the various beef types are inspected on foot, then killed, cut up, and discussed.

* * *

The Bureau of Soils has fifteen parties in the field, in the southern and western states. These parties are shifted with the seasons, working in the north in summer and in the south in winter. A party of nine is working on the storage reservoir problem in Arizona. Most of the parties consist of two men. The Bureau has mapped 34,000,000 acres at an average cost of \$3.10 per square mile.

* * *

At the close of the last session of the English House of Commons a bill was introduced making agricultural and horticultural instruction compulsory in all schools in rural and semi-rural districts.

* * *

An interesting event in the development of horticulture in the University of Missouri took place December 10, when the new horticultural building was dedicated. The exercises were attended by the state fruit growers in a body. Addresses were given representing the educational and commercial sides of horticulture. Professor Craig gave the former, and J. H. Hale the latter. The building is a substantial stone structure, costing \$40,000. It is built by the state.

CORNELL NEWS

CAMPUS NOTES

In 1892 the University herd of Holsteins gave an average annual yield of 273 pounds of butter fat, equal to 318 pounds of butter. In 1902 the descendants of these same cows gave an average annual product of 301 pounds, equal to 351 pounds of butter.

* * *

Within the last year the University farm has been much changed. The Board of Trustees has given to the Athletic Association 55 acres from the south side of the old farm. Twenty-two acres on the east part of this will be made into an athletic field. The 33 acres bordering Garden Avenue will be a play ground for tennis, lacrosse, cricket, etc., where any one may indulge in the game that he likes. The Trustees have more than made up for this reduction by the purchase of additional land east of the old farm. The new portions are the Mitchell farm of 108 acres, the Preswick farm of 56 acres and the Behrend farm of 44 acres. These changes give a farm of 248 acres, of which 92 acres is arable, 93 acres pastures, 49 wood and waste land. Besides this, they have leased another farm of 94 acres.

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The first annual meeting of the Agricultural Experimenter's League of New York will be held January 8-9. Secretary Wilson of the United States Department of Agriculture or his representative will be here. Director Bailey will speak, and reports of the year's experiments will be given.

* * *

Among other courses given by the horticultural department, is one dealing with the construction of various types of modern greenhouses. Through the generosity of some of the leading horticultural builders and manufacturers of greenhouse material we have been enabled to give a very practical course of instruction in this line. At present there is in course of construction a curvilinear, iron framed house, which was furnished by the Lord &

Burnham Co. of Irvington, N. Y. We have also on hand two other houses of different styles, furnished by the Dillon Construction Co. of Bloomsburg, Pa., and A. T. Stearns Lumber Co. of Boston, Mass., which will be erected soon. Other companies have expressed their desire to furnish houses of their type of construction when the class is ready to erect them. Arrangements have been made so that students interested in this work can carry it on throughout the year with profit.

* * *

Professor Wing has purchased sixteen steer calves from the west. There are five Herfords, five Galloways, three Shorthorns and three Angus. All are high grades. They will be used for instruction purposes and for feeding experiments. The high price of meat has caused a growing interest in beef cattle in the East. These, added to the Holsteins and Jerseys of the dairy give us a representative herd.

* * *

The normal institute mentioned in the last number of the COUNTRYMAN was held from November 30th till December 4th. There were ten sessions in all, in which were engaged sixteen professors and instructors, including Dr. Jordan, of Geneva, and Mr. Flanders assistant commissioner of agriculture. The subjects of instruction were: bovine and human tuberculosis, soil chemistry, soil investigation, the importance of water in plant production, the characteristics of soils, the improvement of field crops, forage and soiling crops, recent experiments with alfalfa and other legumes, pastures and meadows, progress in plant breeding, synopsis of experiments with dust spray, troublesome insects of the year, spraying to destroy wild mustard, foundation principles of animal breeding, milk sanitation, the horse, and agricultural law. Two social evenings were enjoyed at the homes of Director Bailey and Professor Craig.

There were about thirty in atten-

dance, whose names follow: F. E. Dawley, director; Fred S. Arnold, Alva Agee, Professor S. A. Beach, C. E. Chapman, H. E. Cook, J. D. Clegg, J. G. Curtis, Chas. M. Day, Emmons Dunbar, John Ennis, Professor Eustace, Andrew Elliott, Dr. E. P. Felt, Fred. E. Gott, Professor H. A. Harding, Hon. John Hamilton, T. A. Hoverstad, John Jeannin, Jr., Professor P. G. Parrot, Geo. T. Powell, Prof. F. H. Stewart, Geo. A. Smith, Dr. C. D. Smead, F. A. Sirrine, F. G. Tice, Edward Van Alstyne, Henry Van Dreser, Jared Van Wagnen, Jared Van Wagnen, Jr., J. O. Wadsworth, D. P. Witter, J. S. Woodward.

* * *

Director Bailey and Professors Hunt and Pearson gave addresses at the New York State Dairymen's Association. This association passed a resolution asking the State Legislature to provide a building for the College of Agriculture.

* * *

Professor Stone is getting out a bulletin on spraying for the eradication of mustard. The co-operative experiments with the copper sulphate spray have been entirely successful. It has saved many dollars for those using it.

* * *

A new feature is being started in connection with the poultry department. A Cornell Poultry Association has been formed. It is the purpose to hold a poultry show each year. Students will choose fowls from the University flock and will fit them for the show. Awards will be made to those who present the best fowls.

* * *

An incubator house is now being constructed. When it is completed it is thought that Cornell will have as good an equipment for poultry work as any college in the country. Professor Rice and the students are doing much of the work of construction.

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A ginseng bed has been established and will be further added to next spring. The various problems that

confront the ginseng grower will be studied.

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Among the numerous experiments being conducted with potatoes, is one that has for its object the improvement of the quality.

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G. W. Bush, '07, was called home on account of the death of his father. He will not be able to return for some time, if at all this year.

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Scott H. Perky, Sp. Agr., associate editor of *THE COUNTRYMAN*, is about to start on an extended trip through the West Indies and Southern United States, where he will study rural conditions. Articles written from these countries will appear in this magazine.

* * *

G. N. Lauman spent his Christmas vacation in Florida.

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Professor A. D. Selby, botanist of the Ohio Agricultural College, Wooster, Ohio, visited us in the early part of December.

* * *

Professor J. W. Decker of the Ohio State University Agricultural College visited the University on his return from the New Hampshire Dairymen's convention.

ADDITIONS TO THE FACULTY

With the reorganization of the College of Agriculture several notable additions have been made to the faculty and brief sketches of these men will certainly be of interest to all former students. These additions are:

Thomas Forsyth Hunt, professor of agronomy and manager of the University farms. Professor Hunt received his preliminary education at the Freeport, Illinois, high school, and took his bachelor's degree in science at the University of Illinois in 1884. After graduation he held in succession the positions of assistant to the Illinois State Entomologist, assistant in Agriculture at the University of Illinois, and assistant to the Illinois Experi-

ment Station, and in 1891 he was appointed professor of agriculture in the Pennsylvania State College. The following year he was called to the professorship of agriculture in the Ohio State University, which position he has held until the time of his present appointment, having, in the meantime, filled the office of dean of the College of Agriculture and Domestic Science of Ohio State University since its establishment in 1896, and that of registrar of the Graduate School of Agriculture. He received his master's degree in science from the University of Illinois in 1892, and in June, 1903, the same institution conferred upon him the honorary degree of D. Agr. Professor Hunt is a member of the Society for the Promotion of Agricultural Science, and has taken an active interest in the Association of Agricultural Colleges and Experiment Stations, having been indentified with a number of its important committees. His numerous publications have embodied the results of his many and extensive investigations in the field of agriculture and allied subjects.

Raymond Allen Pearson, professor of dairy industry. Professor Pearson was born in Indiana, but removing to the East he graduated from the Ithaca High School, and entered Cornell University, graduated from the agricultural course in 1894, and later secured the master's degree. During his senior year he assisted in the laboratory instruction of the first dairy course given in the University. After graduation, he engaged in the milk business in Philadelphia, but when the Dairy Division of the National Department of Agriculture was organized with Major H. E. Alvord as chief, Professor Pearson was made assistant chief, which position he held until 1902. He then became general manager of the Walker-Gordon Laboratory Company, a concern with headquarters in New York and operating branches in sixteen large cities, that makes a specialty of modified milk for infant feeding and high class milk for domestic purposes. Professor Pearson is Fellow of the American Association for the Advance-

ment of Science, and has contributed several important bulletins and reports to dairy literature.

Jay A. Bonsteel, professor of soil investigation, secured his preparation for college work at Franklinville, N. Y. He was graduated with the degree of B. S. from Cornell University in 1896, and held the position of assistant in geology for three years. In 1898 he secured employment on the Maryland Geological Survey, and pursued a course leading to the degree of Ph.D. at Johns Hopkins University, where he was graduated in 1901. He has been employed as field assistant scientist in the Bureau of Soils of the U. S. Department of Agriculture since June, 1899, and is assigned by the Bureau of Soils to carry on the soil investigation work at Cornell. Professor Bonsteel's publications have been issued through the annual reports of the Bureau of Soils.

James Edward Rice, assistant professor of poultry husbandry, was born in Illinois but was brought up on a farm in Washington County, N. Y. His preparatory education was at the Granville Military Academy. He entered Cornell University in 1886, and graduated in the course in agriculture in 1890. For three years he was a graduate student and assistant in agriculture, and during this time gave the first definite course of instruction in poultry husbandry ever given in an American agricultural college. Most of the time since 1893 Professor Rice has been engaged in poultry, fruit and truck farming, at Yorktown, N. Y., in connection with his brother-in-law, under the firm name of White & Rice. The firm has obtained an enviable reputation as a producer of high class products. For the past ten years Professor Rice has taken an active part in Farmers' Institute work, and has been a regular lecturer in New York each year. He has also spoken in New Jersey, Maryland, Minnesota, Connecticut, Rhode Island and Pennsylvania. His contributions to the agricultural press have been numerous and important.

S. W. Fletcher, assistant professor

of extension teaching in agriculture. Professor Fletcher was born on a Massachusetts farm, graduated from the Massachusetts Agricultural College in 1896, then became assistant horticulturist at the Experiment Station of the same state. In 1897-'98 he was a fellow in horticulture in the University, and assisted in instruction in the Extension Department until 1900, when he became professor of horticulture in the Washington State College at Pullman. In October, 1902, he became horticulturist of the West Virginia Experiment Station, which position he has resigned to come to Cornell.

John Main Trueman, assistant in animal husbandry and dairy industry takes the place left vacant by the resignation of Mr. James A. Foord, who is now professor of agriculture in Delaware College. Mr. Trueman is a native of Nova Scotia, and a graduate of the Agricultural School at Truro. He graduated from Cornell University in Agriculture, 1895. He was for two years instructor in dairy husbandry in the South Dakota Agricultural College, and since then has been manager of a large dairy farm in south eastern Pennsylvania, and of a gentleman's country place near Scranton.

Samuel Frazer, instructor in agronomy and superintendent of the University farm, was born in England, took a short course in dairying at the Worleston Dairy Institute, Cheshire, England, 1895-6. Graduated with first place at the Cheshire Agricultural and Horticultural College, Holmes Chapel, England, June, 1898. He has secured the following diplomas and medals: Fellowship, life-membership and diploma (with first place) of the Highland Agricultural Society of Scotland in April, 1898; silver medal, free life-membership and diploma, Royal Agricultural Society of England, May, 1898; medal and honors' certificate in Agriculture, Science and Art Department, London, June, 1898; national diploma in dairying, September, 1898. Since then he has been engaged in various forms of farm and experimental work, and

in giving agricultural instruction.

Robert S. Northrup, instructor in horticulture, comes to us from North Dakota Agricultural College, where he had been assistant in horticulture and forestry for two years. He graduated at the Michigan Agricultural College in 1901.

James A. Bizzell, assistant chemist to the Experiment Station, graduated at the North Carolina College of Agriculture and Mechanic Arts in 1895, and received his M. S. in 1900. From 1895 to 1901 he was instructor in chemistry and assistant in the experiment station of his alma mater. In 1901, he came to Cornell as fellow in chemistry, received his Ph.D., and was appointed to his present position last June.

With the addition of these new men there have also been numerous promotions and transfers.

Professor Bailey, as is well known, became director of the College and Experiment Station and Dean of the Faculty. He relinquishes the professorship of horticulture and becomes professor of rural economy.

Professor Wing's chair has been divided, he retaining the professorship of animal husbandry.

Professor Craig is transferred from the professorship of extension teaching in agriculture to that of horticulture.

Mr. G. N. Lauman becomes secretary of the College and instructor in rural economy.

Mr. G. W. Cavanaugh is promoted from assistant chemist of the Experiment Station to assistant professor in chemistry in its relation with agriculture.

Mr. John L. Stone is promoted to assistant professor of agronomy in charge of extension work.

FORMER STUDENTS

'89, B. S. Agr.—Geo. H. Davidson is on his farm at Millbrook, N. Y. He is one of the most noted Shropshire breeders in the United States.

'94, B. S. Agr.—Harry Hayward, after graduating was appointed professor of dairy husbandry in the Pennsylvania State College. He received his master's degree in '01, in absentia, and December, '02, was made professor of animal husbandry at the New Hampshire Agricultural College. Last May he was appointed assistant chief of the dairy division, Department of Agriculture, Washington, D. C. He resigned this position in July, and is now farm superintendent of Mr. Moody's school, Northfield, Mass.

'96 B. S. Agr.—Leroy Anderson '97 M. S. Agr., '02, Ph.D. Mr. Anderson was Professor Wing's assistant in dairy husbandry until the summer of 1901, when he went to Berkeley to develop the department of dairy husbandry at University of California. He returned to receive his doctor's degree in June, '02, and was immediately called to the directorship of the California Polytechnic School at San Luis Obispo. Professor Anderson still occupies this position.

'97, B. S. A.—James Wheaton Clark is assistant agent of W. O. Wadsworth, Geneseo, N. Y. Mr. Clark used to ring the chimes in his student days at Cornell. His brother, Willard W. Clark, F. E. '02, is a forester in the Philippines in the employ of the U. S. government.

'98, B. S. A.—John Gilmore spent two years in China, taught agriculture in Honolulu, and was director of the government experiment works in the island of Negros. Mr. Gilmore embodied the results of some of his work in the island of Negros in a preliminary report on "Commercial Fibers of the Philippines," published as Bulletin 4 by the Philippine Bureau of Agriculture. Last fall Mr. Gilmore returned to Cornell as assistant in agriculture.

'98, B. S. A.—H. C. McLallen, '01 M. S. in Agr., has lately been appointed assistant in agriculture in the New Mexico College of Agriculture and Mechanic Arts at Mesilla Park, New Mexico. He married Miss Helen Macgregor, November 25th.

'98, Sp. in Agr.—Edgar Salinger

is manager of the "Plasmon" factory at Briarcliff Manor, N. Y.

'98, Winter Dairy.—C. A. Grant is manager of a large creamery at Fulton, Kansas.

'98, M. S. Agr.—In the last mail J. E. Higgins of Manoa Valley received his commission from the Department of Agriculture as U. S. Horticulturist. He has joined the staff of the Experiment Station. Mr. Higgins is a graduate of Cornell University, and an expert in his line.—*The Pacific Commercial Advertiser*, Honolulu.

'00, B. S. in Agr.—L. C. Corbet, '96 M. S. in Agr., Horticulturist of Bureau of Plant Industry, is the author of a bulletin on "Cranberry Culture," recently published by the Department of Agriculture.

'00, B. S. A.—Franklin Sherman, Jr., who is State Entomologist for North Carolina, was married May 12th, '03, to Grace Berry, of Ashgrove, Fairfax County, Va.

'00, Graduate Work.—L. A. Clinton, '89, B. S. Michigan Agr. Col. Mr. Clinton came to Cornell in the fall of 1899 as Professor Roberts' assistant in agriculture. During the past year he has been director of the Connecticut Agricultural Experiment Station, which position he accepted in November, 1902.

'00, B. S. A.—Otto F. Hunziker, '01, M. S. in Agr., was appointed instructor in bacteriology in the Cornell Veterinary College, but now holds an important position with the Scranton Condensed Milk Co., of Ellicottville, N. Y.

'00, M. A.—Jacob G. Lipman, '98, B. S. Rutgers. Mr. Lipman received his Ph.D. at Cornell, June, '03, and is now soil chemist and bacteriologist at the New Jersey Agricultural Experiment Station.

'00, A. M.—C. O. Simpson was for three years in the employ of the Government under Dr. L. O. Howard, entomologist. He is now in South Africa, holding the position of Government Entomologist of the Transvaal, with a salary of \$5,000 a year. This is one of the many cases that illustrate how foreign governments are securing our

best scientists by offering them better salaries than they can get at home.

'01, Sp. Agr.—H. S. Stone is farm manager of the Sailors' Snug Harbor, New Brighton, N. Y.

'01, Sp. Agr.—B. C. White is engaged in agricultural work at Olyphant, Lackawanna county, Pa.

'02, M. S. in Agr.—Robert E. Eastman, '00, B. S. A., Kansas Agricultural College. During the summer of 1902 Mr. Eastman was employed by Miller Brothers on their large peach farm at Pawpaw, West Virginia. He was then called to Hampton Institute as landscape gardener and field assistant in horticulture. He is now back at the Kansas Agricultural College, where he was appointed assistant in horticulture, September, 1903.

'02, Sp. in Agr.—Harry E. Crouch was well known during the three years that he was at Cornell. He took charge of the Polled-Jerseys in the Model Dairy at the Pan-American Exposition, and is now herdsman at the University of Illinois.

'02, Sp. in Agr.—Earl D. Crocker is applying his agricultural theories at Sennett, N. Y.

'02, B. S. A.—George W. Hosford is assistant in agriculture at Hampton Institute, Hampton, Virginia.

'02, B. S. A.—T. M. Sowards is vice-president, and T. F. Sowards, his brother, is secretary of the A. H. Schultze Co., 198 West Broadway, New York City.

'02, B. S. A.—Charles H. Kraatz is on his farm at Akron, N. Y. Recently he has been testing cows for Professor Wing at Wycoff's, Navarino, N. Y.

'02, B. S. A.—Charles W. Wembourne is secretary of the Horse World Co., publishing the *Horse World*, Buffalo, N. Y.

'03, Ph.D.—E. P. Sandsten, B. S. and M. S. at University of Minnesota. Mr. Sandsten is now profesor of horticulture in the University of Wisconsin.

'03, Sp. Agr.—D. C. Stanion sailed for England on December 10th to purchase Cheshire hogs for Mr. Huson of the Kalorama Farm, Penn Yan, N. Y.

He will also make purchases for other parties.

FIRST DAIRY CLASS, 1894

Earl B. Willey, 223 Front Street, San Fransisco, Cal., has been in dairy work for the past four years.

G. W. Breckenridge, Stacy Basin, Oneida County, N. Y., followed the business of butter and cheese making at Higginsville and Fonda, N. Y. until the fall of 1901. He then bought a farm of 200 acres near Stacy Basin and is now actively engaged in farming.

J. E. Dorman, Thalia, Princess Anne county, Va. After leaving Ithaca Mr. Dorman ran a creamery in New Jersey for a year, but left this to take charge of a model dairy farm near Philadelphia, where he remained for three years. He then accepted his present position as manager of an 1,800 acre truck and dairy farm, which has also extensive oyster beds on the Lynnhaven River. Mr. Dorman says that his training at Cornell has been a great help to him. Every move he has made has been in response to an increase in salary until at the present time it amounts to \$1,500 a year. He adds that the most important event that has happened to him since the winter of 1894, is his marriage in 1899 to Miss Katherine Fredricks of Washington, D. C. They have a son that he hopes one day will be a student at Cornell.

Herbert Hoopes, V. M. D., Bynum, Hartford county, Maryland, was the youngest man in the dairy class of 1894. He had charge of their home creamery until the fall of 1896, when he entered the Veterinary Department of the University of Pennsylvania graduated in 1899, and has since been practicing, with headquarters at home, where he has a dairy of 200 registered Jerseys. Dr. Hoopes was married two years ago this January.

Peter Langwell, Wolcott, N. Y. Rockford, Ill., is Mr. Langwell's old home, but Wayne County has been the scene of his labors for the past nine years. He has been with the Sodus

Co-operative Creamery Co., since the company started. H. B. Douglas, who was a student in the dairy school, is their butter maker at Wolcott, and A. S. Chaplin, graduate of Wisconsin's dairy school, holds the same position at Sodus. Mr. Langwell is secretary, treasurer and manager of the company's plants, and is a busy man.

George L. Lucas, Pawling, N. Y. was in a butter factory before coming to Cornell, and since 1894 has continued to follow the milk and its products. He made butter until 1898, and then went into the bottling business. He is now in charge of one of the large bottling plants of the Slawson-Decker Co., located 64 miles from New York in a rich farming section of the Harlem valley. Mr. Lucas employs nine men, and ships about 9,000 quarts of bottled milk daily.

Frederick H. Merry, Verona, N. Y. During the year of 1899 Mr. Merry was in the employ of James P. Brown's Sons of Utica, N. Y., dealers in cheese, both for home and export trade. His main work was visiting the factories and inspecting the cheese. Since 1894, with the exception of the year mentioned, Mr. Merry has been in charge of the butter and cheese making in the G. Merry cheese factory and creamery located at Verona, N. Y.

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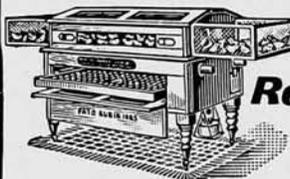
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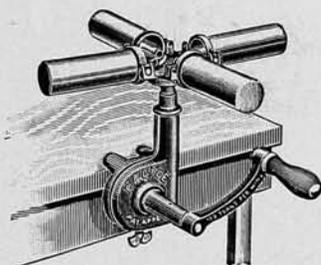
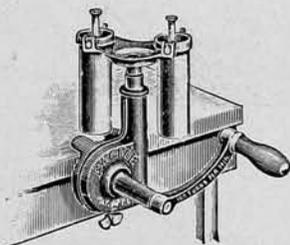
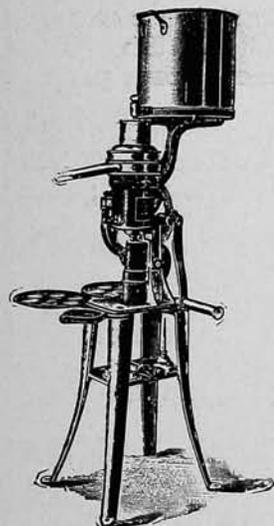
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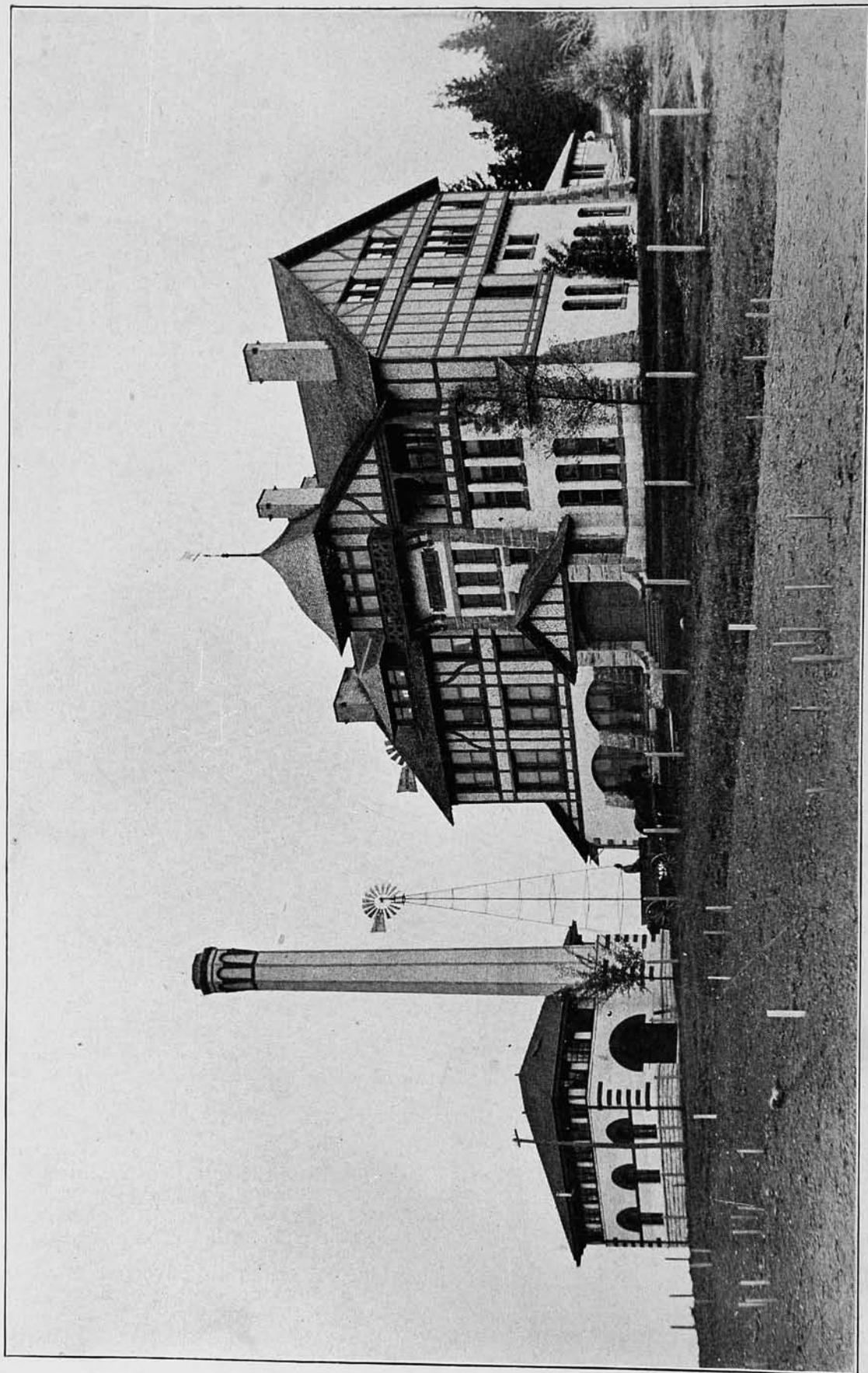
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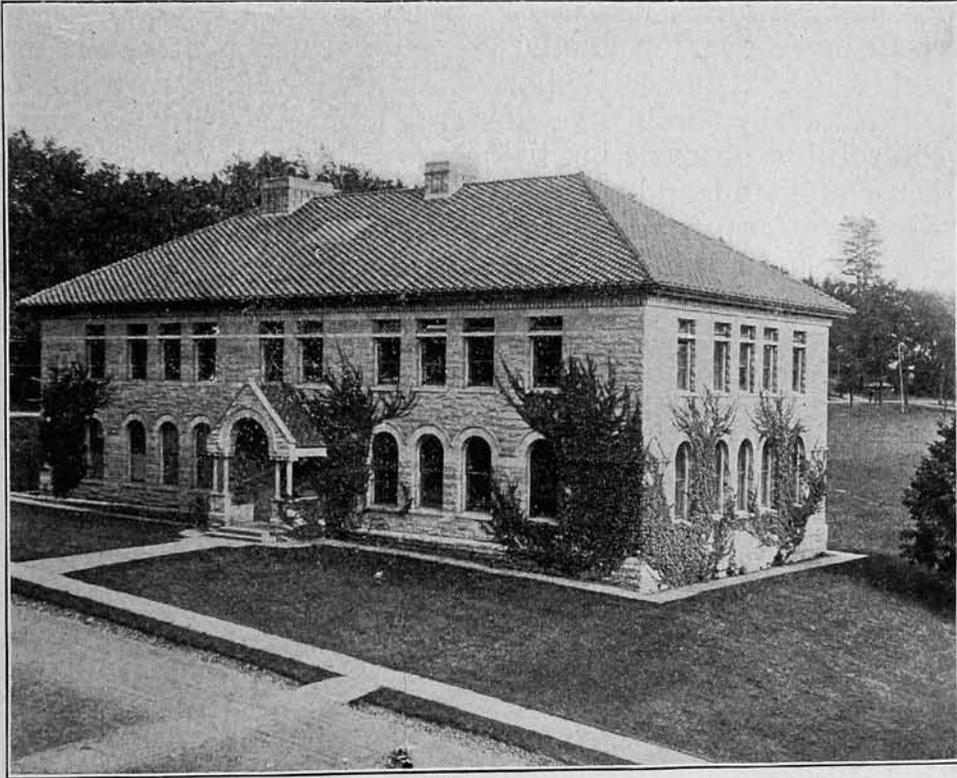
One of the six buildings that Wisconsin has furnished for its Agricultural College. The state has also provided a number of minor buildings, greenhouses, barns, farm houses, etc. See page 82

THE CORNELL COUNTRYMAN

Vol. I

FEBRUARY, 1904

No. 3



DAIRY BUILDING

The only building that New York has furnished for its Agricultural College. See page 82

THE OUTLOOK FOR AGRICULTURAL TEACHING

II. IN THE SOUTH

By Andrew M. Soule

Director of the Experiment Station and Professor of Agriculture, University of Tennessee

MANY things have occurred recently which may be regarded as encouraging signs of the times so far as agricultural education in the South is concerned. There is a general awakening of the people along these lines, and a renewed interest in agricultural pursuits. The southern farmer has some serious problems to solve—a fact he has been slowly but surely discovering in the last few years. In the beginning he had a soil capable of producing a wonderful variety of crops, a congenial climate, which made living from the soil comparatively easy, and a ready market for his product—the fleecy staple. Cotton has been and always will

be one of the greatest crops of the South, and being adapted for cultivation over millions of acres of land and easy to handle, and one of the greatest, if not the greatest, ready money producing crop in the world, it is no wonder that so much of the time and attention of the southern farmer should have been absorbed in the cultivation of "one crop" to the exclusion of many others which would have added materially to his wealth, and also enabled him to live more cheaply and better, and to maintain the fertility of his soil for an indefinite period. The southern farmer has been land poor, and, in fact, is yet; that is, the southern farmer has had

too much land, entirely too much, and hence he has tried to farm immense areas of land, and instead of succeeding has simply scratched the surface. What has been the result? When one piece of land was worn out, a condition soon brought about through careless methods of cultivation, it was an easy matter to move over on another piece and cultivate that under similar conditions. Naturally millions of acres of good soil have become but little better than waste land, and now the farmer finds himself confronted with an exhausted soil, and has been forced to realize the necessity of changing his methods and pursuing a more intelligent and systematic method of cultivation in order to obtain profitable crops. Thus it is that natural conditions are already forcing education on the southern farmer. He is coming now to realize as he never did before that education is as necessary in farming as in any other calling, and when nature undertakes to enforce a lesson she generally does it on a wholesale plan, and so thoroughly that there is no escape from the truth.

A few years ago farmers' institutes were practically unknown. Now nearly every southern state is making some provision for them, and a number are conducting them on an effective and judicious basis, one calculated to do the most good, and to reach the largest number of people. An instance to show the rapid growth of the institute movement will not be out of place. The first systematic effort made in the state of Tennessee was undertaken four years ago with an annual appropriation of about \$2,500. The last legislature increased the amount to \$5,000, and it is the intention of the present Commissioner of Agriculture, Hon. W. W. Ogilvie, who has supervision of the institutes, to hold one, if possible, in every county in the state. There are many counties in Tennessee where institutes have never previously been held, and it has been extremely gratifying to those connected with the movement to see how many farmers turn out, how thoroughly they enjoy the proceedings, and how anxious they

are for information that will help them to improve their practice. In many instances there are from 600 to 1,500 people present at the county institutes, and it is safe to say that between 25,000 and 30,000 farmers will be reached and benefitted by the institute the present year.

The growing interest in agricultural education is shown by the number of states which have made appropriations to develop the work of their experiment stations in the past few years. This result has been brought about by a change in sentiment in the rural communities. They have come to realize that the station is performing an invaluable work for them, and that by giving it appropriations sufficient to enlarge the scope of its work they will derive still greater benefits in the future. Thus the stations are regarded with favor by the farmers of the South to-day; whereas a few years ago they were the cause of many heartaches, and were generally held in contempt because the farmers were not familiar with their purpose, nor were they at that time able to appreciate and understand the valuable service they were rendering the community. The farmer has now become educated to the value of the experiment station, to the utility of its publications, and there is hardly a southern station to-day that is not financially embarrassed because of insufficient funds to print large enough editions of its bulletins to supply the demand the reading farmers are making upon it. Is not this a hopeful and encouraging sign, and does it not point to a general interest in agricultural education?

The movement of the state legislatures to appropriate money to institutions devoted to the training of farmers' boys along practical lines, as in the case of the agricultural college, is another encouraging sign. One who can not recall the time when the agricultural college was the laughing stock of the community, and the man who ventured to go there was dubbed a "book farmer," and was lucky to escape with so mild an appellation, can hardly appreciate the change in senti-

ment relative to these institutions, but the mere fact that agricultural colleges and stations are now receiving favorable consideration at the hands of the state legislatures indicates a marvellous change in sentiment, and shows that the time is not far distant when these institutions will receive all the money they need for their development along legitimate lines. Those who have had experience in agricultural colleges know full well that one of the reasons why they have not made greater progress has been due to the meagre support they received from the state, and to the fact that their equipment, and hence opportunities for providing the right kind of instruction, were so limited as to practically render their efforts ineffective. A great victory has been won in this respect, and the future of the agricultural college in the South is assured. If it is conducted along rational and intelligent lines, and if the instruction provided is of the right type and adapted to the needs of the community it hopes to serve, the number of students pursuing agricultural studies in southern colleges will increase accordingly. Already there is a strong sentiment in favor of short courses in agriculture and kindred subjects which have proved so popular in many northern institutions, and this is but the vanguard of what will follow.

The rural schools of the South are being wonderfully improved, which means that the boy who is to be the future farmer will have implanted the desire to know and understand and appreciate things with which he is working. The rural school problem has been a serious difficulty, but it has been practically solved through the movement to consolidate the rural schools and establish a secondary school for each district. Thus the little weak schools with their inefficient and underpaid teachers are disappearing rapidly, and it is only a matter of a little while until they will have passed away, and in their place will be found well equipped and well constructed school houses and efficient teachers who will devote all their time to instruction in the primary grades, and

then pass the children on to the secondary schools. What this means to the agricultural college can not be expressed in a few words. It means laying the proper foundation for the future education of the child. It means the direction of the minds of the boys and girls along proper lines. It means inspiring them to strive to become the most intelligent and useful citizens. It means teaching them more and more about their surroundings, and of the great problems which underlie farming through the introduction of the elements of agriculture into the curriculum of the public, and particularly the secondary schools of the state. These schools will then of necessity become feeders to the agricultural college, and so it does seem to the writer that the future for agricultural instruction in the South is bright and promising.

The farmer has been slowly but surely recognizing the necessity of his children having advantages which he did not enjoy. He has come to recognize the fact that the farmer must be an educated man; that the child to cope with the problems of agriculture in the future must have the best training the parents can provide, and as the majority of them can not hope to go to school except in the home community, it is essential if he is to have the benefit of any agricultural instruction that he obtain it in the rural schools. Those who are familiar with the history of agricultural instruction in the schools of Europe and other foreign countries know full well what it has accomplished there, and while like results will not be obtained in the United States for some time, everything tends to convince the writer that as great if not greater results will be accomplished in this country through the medium of agricultural instruction in the rural schools than has been achieved in Europe.

One of the things that has helped to bring about the present sentiment with regard to agricultural training in the South is the prosperity of the southern farmer. The southern farmer was left high and dry after the war—a financial wreck, soils exhausted, fences burned, buildings gone.

The outlook did indeed seem hopeless. Approximately forty years have elapsed since the close of the great struggle, and during the greater part of that time the southern farmer has been a debtor, struggling along and eking out a bare existence, but a change has recently come. During the last five years the farmers of the South received \$2,575,000,000 for their cotton crop against \$1,775,000,000 for the five preceding years, which shows a total gain in five years of over \$800,000,000. Think of this stupendous amount of money going into the pockets of the southern farmers. It has enabled them to pay off mortgages and debts of years standing. It has enabled them to purchase better implements, to build houses and to better bear the burden of taxation. Is it any wonder with this great influx of wealth due to one crop alone in the last five years that the southern farmer has been termed prosperous and success-

ful? Is it any wonder that he has turned his attention to the improvement of his rural schools and the development of schools of agriculture commensurate with the needs of his country and to supporting the work which the state experiment stations are doing for him?

The future of agricultural education seems bright. The South is indeed a young giant just now throwing off the money fetters which bound it and well nigh stifled its progress for many years, and this is the beginning. Just now manufacturing and commerce are reviving in the South. Just now the farmer is becoming an independent factor in the community because free of debt. What the future holds it alone can tell, but it is safe to say that the time-honored maxim of Horace Greeley should be changed to read, "Go South young man and grow up with the country."

AGRICULTURE AT THE WORLD'S FAIR

By F. W. Taylor

Chief of the Department of Agriculture at the Louisiana Purchase Exposition

IN the first place a few words as to the provision made for housing the products of the fields, orchards, vineyards and gardens. The Palace of Agriculture and Horticulture crowns a beautiful eminence, called Agricultural Hill, which is surrounded by profuse formal and informal landscape gardening, making a setting at once appropriate and pleasing in its artistic grouping. Grasses, bulbs, shrubs, creepers, aquatics, roses, conifers and all else that mother nature supplies in such profusion will be blended in this setting for these imposing structures. The Palace of Agriculture, the largest structure on the grounds, covers twenty acres of land, and the Palace of Horticulture, six acres. These structures are treated in color, in part, and in that much differ from the other exposition structures, which are treated in old ivory tints. In all, inside

and outside space, more than seventy acres are devoted to the progress and development of the husbandman's craft—or science, more properly speaking.

The twenty acres have proven much less than could be used by this largest and most profitable of American industries. Enormous as the structure is, applications for space now on file would require an additional ten acres to accommodate. This condition assures the visitor of boiling down and selection in the exhibits presented, and also illustrates the widespread interest in all that pertains to the soil and its fruits, in all our great country.

The general scope of the classification and grouping covers all the products coming from the soil; the tools, implements, methods of cultivation, of harvesting, of irrigation, of drainage; the by-products and manufactured forms of those products, their prepara-

tion and preservation as foods and as articles of commerce, including everything edible and drinkable which comes however remotely from the soil.

The spirit of rivalry among the states is strongly manifested by the painstaking elaboration which characterizes their efforts in presenting the salient phases of the agriculture of each. The experience of the past is combined with the new knowledge of to-day to produce the results which will make the St. Louis World's Fair par excellence the most comprehensive and intelligent presentation of husbandry yet seen by the world.

Special features in the way of universal exhibits will occupy the central bay of the Palace. This bay is 100 by 1,600 feet, and 60 feet to the truss beams from the floor. Here will be installed corn, cotton, tobacco, cane and beet sugar, etc. By "universal" as used above, is meant that the exhibits of these crops will be made up from the production of each of the states growing the same on a commercial scale. These universal exhibits are really auxiliary to the state collections; are intended to relieve them in a certain sense from sameness and repetition by bringing the materials from each and blending them into an harmonious whole; at the same time to carefully emphasize the characteristics and peculiarities in the cultivation, harvesting and handling, as well as the differences in the resulting products. Thus it is intended to show the corn produced in every state in the Union, side by side. This has never been done before, and must prove of interest to the grower of corn, no matter from whence he may hail. And also in apposition will be found the commercial products and by-products of corn: the several varieties of starch, of glucose, of dextrin, of sugar, of syrup; corn oil, rubber, oil cake, germ oil meal, gluten meal; of foods, corn meal, samp, grits, hominy; stock foods, stover, ensilage, fodder, shucks, shuck mats and mattresses; canned or preserved corn, malt, whiskey, dry wines, alcohol; cob ash, cob pipes, etc. Besides these objects the statistical phase of these crops will be so illustrated as

to show at a glance the production in the United States, and the relation each state bears to the total crop, and other pertinent items of statistical interest.

In the section devoted to foods, which is most complete, every known article of food is shown, as well as the most acceptable carrier or package in which it should find its way to the market. Cereals in all forms, compounds, cooked and uncooked, flesh, fish, fowl, fruit, fresh, refrigerated, preserved, dried or otherwise preserved; all of the whiskies, brandies, wines, beers, ales and waters. The Dairy Section adds its quota of butter, milk, cream and cheese. The methods and processes of handling and manufacture are all amplified, and the vessels and machinery for the manipulation are all shown in operation. In fact, this section will be little short of a dairy school in full operation.

Space is also afforded the makers of machinery, tools and implements—all essential for the successful operation of the modern farm, orchard or garden.

The Palace of Horticulture has a central space of four acres which is devoted exclusively to fruits and nuts. The central forty thousand feet are devoted to a plate show of apples, peaches, pears, grapes, plums, etc. The ornamental features of installation surround this space and will thus contribute to the pleasing ensemble. Already more than fifty car-loads of fruit for this building are in cold storage. The softer fruits will come in their season.

Cut flowers, tea gardens and horticultural tools occupy another acre of space, while the remaining acre is for greenhouse plants.

This is but a bird's eye glance of the subject of Agriculture at the Louisiana Purchase Exposition. It cannot convey any adequate conception of what is really in store for the visitor. Each of the states has a special interesting and illustrated story to tell, without taking into account that which is to be shown by England, France, Germany, Canada, Mexico, Ceylon, China, Japan, Russia, Italy, and the Islands of the Sea.

SOCIETY FOR HORTICULTURAL SCIENCE

REPORT OF THE ST. LOUIS MEETING

By V. A. Clark, Assistant Secretary

THE first annual meeting of the Society for Horticultural Science was held in St. Louis, December 28 and 29, in connection with the meetings of the American Association for the Advancement of Science. In the absence of President L. H. Bailey, Dr. B. T. Galloway of the U. S. Department of Agriculture presided. In opening the meeting he remarked that he considered the organization of this Society one of the important forward steps taken in horticulture in recent years.

Cornell was well represented at the meeting. While Professors Bailey and Craig, both of whom were on the program, were much missed, still there were present Professors L. C. Corbett and R. A. Emerson and Dr. B. M. Duggar, all ex-Cornellians.

The object of the Society is to provide a central organization in which horticultural teachers and investigators may meet and discuss the scientific and technical parts of their work. The Society aims to promote the scientific sides of horticultural teaching and investigation, and to aid in reducing the present great body of horticultural knowledge to a more strictly scientific form.

In the opening paper of the program Professor L. C. Corbett, Horticulturist of the United States Department of Agriculture, emphasized the need of co-ordinating investigational work in horticulture by adopting an iron-clad system of note-making on varieties, so full in detail that the observer shall have a suggestion from the outline before him for the form in which to record practically all his observations. Such a plan, if adhered to by all who carry out local studies upon general crops, would ultimately make available a mass of material from which broad general principles, both of theory and of practice, could be deduced.

Further, these notes would, if properly conceived and executed, serve as a basis for those taxonomic studies which are so much needed for fruits as well as for vegetables.

Professor Corbett suggested that the Society for Horticultural Science, being national in scope, could be an immensely important factor in aiding in the accumulation of information of this character. Acting on this suggestion, the Society added to its list of permanent committees one on the co-ordination of horticultural work. So the Society already gives specific promise of exerting a definite influence on horticultural investigation.

Mr. David G. Fairchild, Agricultural Explorer of the United States Department of Agriculture, spoke of the mangosteen, "The Queen of tropical fruits," and expressed the belief that it might be successfully grown in Hawaii, Porto Rico and even in the everglades of Florida. The mangosteen requires a very moist soil, and in providing such, Mr. Fairchild believes lies the secret of its successful culture.

Professor R. A. Emerson of the Nebraska Experiment Station discussed quantitatively, so far as existing knowledge permitted, the effects of cover crops on soil moisture and soil temperature; but he pointed out that we have very little exact knowledge on this subject as yet. Otherwise the effects of cover crops are very imperfectly understood. A number of lines of inquiry of immediate moment were suggested. The cover crops which appear to be best suited to Nebraska conditions are those, such as millet, which are killed by early frosts, and hence do not continue withdrawing water from the soil late in the fall, and which do not mat down in winter and hence better hold the snow on the ground, preventing its freezing so deeply.

Dr. H. J. Webber of the United States Department of Agriculture gave an illustrated talk on the frost-resisting citrus fruits he has produced by hybridizing.

The race resulting from the cross of the common orange and the hardy trifoliolate has been named the Citrange, and another race springing from a cross of the Tangerine orange and the pomelo or grape-fruit has been named the Tangelo. Dr. Webber prophesies that within ten or fifteen years we shall have edible hardy oranges.

Professor S. A. Beach of the Geneva Experiment Station pointed out certain applications of seed selection in grape breeding, and showed that by mechanically selecting the seed according to size and specific gravity the seeds which would not germinate at all, those which would produce seedlings mostly weak in growth and those which would produce vigorous plants could be separated from each other. It was shown also that the relative vigor of the seedling in its first year of growth was characteristic of its vigor in later growth. Hence where vigor of mature plant is alone considered, selections may be made among one-year-old seedlings. In breeding grapes, as also tree fruits, it is highly desirable to begin selection as early in the life of the plant as possible, since it is impracticable to bring so great a number of these large plants to maturity as it is of small plants.

The writer of this report described a variation of the method of seed selection by salt solutions, the seeds being passed through a series of solutions of uniformly varying densities. After seeds have been selected according to size, the method of specific gravity carries the selection one step farther. Aside from a somewhat limited application in practice, the method promises to be valuable as a control in seed selection by fanning mill or centrifugal methods.

A feature of the program was a symposium on the shading of plants as a horticultural practice, opened by Professor Corbett with a summary

statement of the horticultural applicabilities and effects of the practice. Dr. B. M. Duggar followed with a discussion of the physiological effects of shading. He found an almost utter lack of measurements of the effects of a slightly diminished intensity of light on plant growth, although the effects of complete interference with access of light has been much studied.

Mr. P. H. Rolfs, in charge of the Department of Agriculture's sub-tropical laboratory at Miami, Florida, spoke on the shading of pineapples and citrus. This practice is often called shedding, since partly covered wooden sheds are used. The important effects of shedding are, reduction in intensity of light, equalization of temperature, and increase of soil moisture due to decreased evaporation and transpiration. All these effects as applied to the pineapple are beneficial, increasing the marketable crop about 25 per cent. But reduction of intensity of light in the case of citrus greatly reduces the yield, though it increases the size and the quality of the fruit. The substitution of a high, tight wind break for the shed in the case of citrus affords all the benefits of shading without cutting off light.

Mr. W. T. Macoun of the Canada Experimental Farms reported the results of growing a number of kinds of vegetables within a cheese-cloth enclosure.

Dr. H. J. Webber gave an account of tobacco-breeding work he has under way, the object of which is to produce a strain of Sumatra tobacco that will bear a large percent of wide wrapper leaves when grown under cover. Existing varieties do not do this.

O. M. Taylor and the writer of these notes reported on an experiment in shading strawberries, from which it appeared that the practice is not to be recommended in general field work. The effects of the cover on the environment were studied and in turn the effects of the changed environment on the plant. The chief benefit of the practice was found to lie in greatly diminishing the velocity of wind, thus conserving soil moisture.



THE EXPERIMENTERS' LEAGUE

THE EXPERIMENTERS' LEAGUE MEETING

Reported by J. E. Coit and L. H. Weld

THE first annual meeting of the Agricultural Experimenters' League of New York was held at Cornell University, Jan. 8-9, 1904. An account of the formation and objects of this society was published in the December number of THE CORNELL COUNTRYMAN. The president, Professor James E. Rice opened the meeting with a cordial address of welcome. In the absence of Mr. Van Wagenen the response was made by Charles Royce, '91, of Dansville, Pa.

The first address was by Professor L. C. Corbett, who represented the United States Department of Agriculture. Professor Corbett spoke very interestingly of the work of the various experiment stations, as well as of that of the Department at Washington. A great deal of investigation work has been done and much literature published. More energy should now be expended upon the collection and classification of this literature, so that it may be easily available to the farmer. Experiment station bulletins should be better illustrated, and more demonstration work should be done. Farmers, like all of us, are too often blind to the tremendous opportunities which lie in their immediate vicinity.

The Future of Co-operative Experimental Work.—The second address was by Director Bailey. He had written to all the state experiment stations asking whether they were doing co-operative experiment work with farmers, and their opinion on the value of such work. Of the 44 stations heard from 37 were doing co-operative work. Fifteen stations did not believe in co-operative work, and two had no opinion to express. A large number of experiment station directors were of the opinion that data gained by co-operative experiments with farmers were of no value or of little value.

It seemed to be the concensus of opinion that investigation work carried on in this way was of no value unless the land was controlled by the station, and the work personally supervised by an

officer from the station. On the other hand co-operative experiments carried on among the farmers as object lessons and for the purpose of demonstrating to the farming community certain scientific facts which had been worked out at the main station, were very satisfactory. Experiments of this kind should constitute one of the main lines of work of the Experimenters' League.

In New York state there are being carried on among the farmers about 700 co-operative experiments. These may be divided into four categories. First, research work; in this the station should control the land and the work just as if it were done at the central station. The amount of such work should be small, and should deal largely with fundamental problems. Sub-stations as a rule do not pay, for nearly all the fundamental problems can be worked out at the main station. Second, emergency problems. Third, testing and disseminating work, distributing varieties suitable to each locality, etc. Fourth, demonstration work. Every man's farm is his own local problem. The old method of teaching was for the one man to tell the many men what he knew, and the next day for the many men to tell the one man what they understood him to say. All this is changing. Education to-day is democratic.

Professor Bailey went on to say: The annual federal appropriation for the state experiment stations is \$15,000. They need \$15,000 more, and they are going to have it. The stations have been practically at a standstill for ten years. They are all clamoring for more money. This shows that they are thoroughly alive and healthy. The experiment stations need educated men, and will need them just as long as men are. You cannot attack a small subject with a small man.

There are, according to the census, 220,000 farms in New York state. There is to be a census of the state taken in 1905, and it is greatly desired that this census furnish the address of

each farmer. If it does, a letter will be sent to every farmer in the state calculated to cause him to become interested in the experiment station and agricultural education. This is a much more difficult matter here in New York state than it is in the West where three-fourths of the population is agricultural. The West is growing at a rapid rate. If you have not been there, you cannot know the sentiment which promotes rural pursuits. We need money, not for any man's salary any more than he deserves, but to make New York state what it ought to be.

The President's Report was given on Saturday morning. He outlined the benefits to be derived from the co-operative work of the league. 1. Training in thinking and experimenting with accuracy. This teaches the student and farmer both the science and the art—knowledge and skill. 2. It gives first hand information that stays in the mind long after book-learning is forgotten. 3. Such experiments increase an interest in agricultural subjects and stimulate the man to greater things. 4. They serve as object lessons to the neighbors who are not experimenters themselves. An extra fine piece of corn is a better educator than a bulletin.

Field Crops.—F. A. Salisbury, Maplewood Farm, Phelps, N. Y., reported on experiments in spraying potatoes for the prevention of blight. Arsenic was used once with the Bordeaux for the bugs. Six rows were sprayed at a time, and care taken to do thorough work. The following figures show the expense and profit on spraying a 10 acre field:

Vitriol	345	lbs. @	6 c.	\$20.70
Arsenic	10	lbs. @	5½c.	.55
Sal Soda	12	lbs. @	1¼c.	.15
Lime	5	bu. @	35 c.	1.75
Labor	30½	hrs. @	17½c.	5.33
Labor	25	hrs. @	15 c.	3.75
Labor, Team	28	hrs. @	17½c.	4.99
Wear on Machinery00
Total Cost				\$40.22
Yield per Acre, Sprayed			154.90 bu.	
Yield per Acre, Unsprayed			92.35 bu.	
Gain per Acre			62.55 bu.	
625.5 bu. gain in 10 Acres @ 50c. ..				\$312.50
Expenses				40.22
Gain from Spraying				\$272.28
Gain per Acre				\$27.23

H. B. Winters, the Winters Farm, Smithboro, N. Y., reported some excellent results with Lang's White Tartarian oats. He is also conducting experiments with sunflower in silage, and with alfalfa. Considerable discussion followed this paper, and attention was called to the fact that the alfalfa crop of the United States has come to equal all other hay crops, and that it is grown on half the area.

Professor Hunt spoke on the important place that plant breeding is to occupy in the new agriculture. A station for that purpose has been established in Sweden. An association has been formed in Illinois to breed and sell corn. The principles of plant and animal breeding are the same, although the methods employed may be different. Plants with a pedigree are wanted.

Professor Bonsteel spoke on soil physics. The most recent work in soil investigation lies on the border line between physics and chemistry, *i. e.*, looking at the phenomena one can hardly tell whether he is observing physical or chemical changes. This work has tended to emphasize the importance of the part water plays in crop production. Certain physical properties of soils such as color, weight, exposure, we can not readily change, but we can so manipulate the soil as to change its relation to moisture and thus indirectly change its temperature. Water in the soil acts (1) as a reagent to prepare plant food, *i. e.*, to dissolve mineral nutrients; (2) as a carrier of plant food into the plant; (3) on account of its specific heat and latent heat it greatly influences soil temperature. The available moisture is coming more and more to be regarded as the chief factor in soil fertility.

Professor J. L. Stone, chairman of the Section of Field Crops, reported as follows: "During the first season of the League, experiments have been conducted with alfalfa, oats, fertilizers, potatoes, sunflowers, soy beans, field beans, buckwheat, Bokhara clover, crop rotation, soil renovation and the destruction of wild mustard by spraying with copper sulphate solution.

Alfalfa.—"Without mentioning details it may be stated that in the alfalfa experiments it is indicated that the crop can be grown on a much wider range of soils than was first thought to be possible. Seeding without a nurse crop is usually more successful than with one, though occasionally the reverse is true. In those localities where lime is not abundant in the soil, dressings of lime produce marked effect in the growth of the crop and in the abundance of nodules on the alfalfa roots. In limestone sections the roots become loaded with nodules without artificial inoculation, but in other localities inoculation by means of soil from an old alfalfa field greatly increased the number of nodules, and evidently increased the vigor of the plants.

Potatoes.—"In the variety tests of potatoes numerous reports were received. In seventeen of these experiments three varieties—Doe's Pride, Green Mountain and Sir Walter Raleigh—were grown side by side. The average yields per acre of 17 trials given in the order named above were: 320.40, 306.66 and 258.23 bushels. The averages on 6 light soils were 328.30, 328.30 and 310.00 bushels. The average on 11 medium soils gave 316.06, 265.43 and 230.00 bushels. The difference in yield between the light and medium soils was, therefore, 12.24 bushels for Doe's Pride, 62.87 bushels for Green Mountain, and 80.00 bushels for Sir Walter Raleigh. During this season of excessive moisture all the varieties seem to have done better on the lighter grades of soils, still Doe's Pride, which is the heaviest yielder, seems to be much less affected by the heavier soils than the others. Sir Walter Raleigh seems to have done much better on the light soils than on the medium. It is, however, unsafe to accept these results as of wide application upon one season's observations.

Wild Mustard.—"The experiments with copper sulfate for the destruction of wild mustard were very satisfactory. It is found that a 3 per cent solution (about 10 pounds to the barrel of water) of copper sulfate spray-

ed at the rate of one barrel per acre will destroy wild mustard growing in cereal crops or peas without injury to the crop. Potatoes are quickly injured by the spray, beans and sugar beets to a less extent."

He also reported on tests of field beans, buckwheat, soy beans and cow peas, and tests of growing sunflowers in corn for silage.

Horticulture.—W. C. Buell of East Bloomfield, N. Y., gave a report of financial success in renovating an unprofitable orchard by means of cover crops and tillage.

W. W. Bassett, Greening Fruit Farm, Farmer, N. Y., gave a report on thinning plums. He thinned to 3 inches apart in June at a cost of 15 cents per tree, and found the benefit derived to be four times the cost.

Professor Craig gave his report as chairman of the section of horticulture.

The season of 1903 was abnormal—a dry April checking fungus parasites so that there was little apple scab or fruit rot. Some good experiments were made with cover crops. Mr. Bugbee of Gasport found that Mammoth clover did the best. His was a very shady Greening orchard on gravelly loam. Mr. Salisbury of Phelps also had best results with Mammoth clover, with hairy vetch second. Mr. Buell of East Bloomfield puts vetch first, then alfalfa and sweet clover; soil a stiff clay. Mr. Knox of Canton got the best cover in a young orchard on sandy soil with vetch. Mr. Deyo of Gardiner prefers vetch and then Mammoth clover for a young orchard on gravelly loam. The season was unfavorable for cow peas.

Several experiments were made to prevent fruit rot (Monila) with ammoniacal copper carbonate. It was found to injure the foliage of Burbank, Field, Bradshaw and Lombard plums, but may be found useful on the peach.

Animal Husbandry.—Prof. Wing reported that some co-operative work had been done in testing the new method of milking—the Hegelund system (See Wis. Bul. 96 and Cornell Bul. 213). Experiments in animal husbandry mean constant daily atten-

tion and careful records, and these records are chiefly valuable to the man who keeps them that he may weed out unprofitable animals. Breeders' associations find profit in keeping pedigree and performance records. Co-operation is needed in gathering vital statistics of animals, the weight of calves at birth, the length of the period of lactation, the period of gestation, and the fecundity of pigs.

Professor Rice spoke on the need of co-operative experiments in poultry husbandry. J. W. Gilmore, delegate to the Ontario Experimental Union, gave a report of their meeting (see *THE CORNELL COUNTRYMAN* for January).

The following officers were elected for the ensuing year: Honorary President, I. J. Roberts; President, H. B. Winters, Smithboro, N. Y.; First Vice-president, H. A. Harding, Geneva, N. Y.; Second Vice-president, F. A. Salisbury, Phelps, N. Y.; Director of Experiments, J. L. Stone; Secretary-Treasurer, J. W. Gilmore. Resolutions were passed looking toward the publication of the proceedings of the meeting by state aid; recommending additional sections in dairying, poultry and thermatology (breeding of animals and plants); commending Governor Odell's interest in a new agricultural building for Cornell, and favoring the formation of a student aid fund.

On Saturday night the regular students of agriculture gave a reception at Barnes Hall to the winter course students and the members of the league.

President Schurman made a short address in which he welcomed the winter course men to Cornell. He ex-

pressed his appreciation of the students' faith in Cornell as evinced by the fact that notwithstanding the typhoid epidemic which raged here last year, more students have registered this year than ever before. President Schurman went on to say: "I am not surprised at the large attendance of students from the farm, in fact I think that this is an epoch in the development of the short course in agriculture. It would not surprise me in the least to see 1,000 students enrolled in the short-course ten years from to-day. Never before this year has there been such a strong sentiment all over the state in favor of agricultural education. Before we have been misunderstood, now there is a good understanding between the Agricultural College and the legislators of New York. We have asked this great state to give us money not to carry on the University, nor to give free instruction to the students, but to erect a building where we may give free instruction to the students in agriculture. We have never before started a year under such happy auspices, and I hope that you will get so much out of it that you will come back next year. We wish to give you something that will make you more scientific farmers. You may think now that you know a little but at the end of three months you will find that you know so little that you will want to come back next year."

Director Bailey followed in his usual happy style. Singing, cheering and refreshments helped to enliven the evening. There were about three hundred and fifty people present. The meeting was the most enthusiastic ever held by the students of agriculture.



IS THE WORK OF AGRICULTURAL COLLEGES PRACTICAL?

By *H. Truckell*

A Student in Agriculture

The Country Gentleman and *Hoard's Dairyman* for early December tell us that the highest year's official milk and butter records were made by a cow from a college herd (Belle Sarcastic 23,039 H-F. H. B.) In the twelve months of 1895 she gave 21,075.8 pounds of milk, containing 632.8 pounds of butter fat; and for the year of 1896, 23,189.6 pounds of milk, with a fat content of 721.68 pounds. She gave 82.1 pounds of milk in one day. In this she was excelled by her stable mate (Rosa Bonheur 5th 11,227 H-F. H. B.), who gave in one day 106.75 pounds. These cows were owned by the Michigan Agricultural College, and were fed under the direction and supervision of Professor C. D. Smith.

At the last Chicago Live Stock Show the prize winning steer, Challenger was a grade by a pure-bred Herford from a cross-bred Holstein-Shorthorn cow. Challenger was owned by the University of Nebraska, and was fattened on a ration the composition of which was regulated by the professor in charge of the animal industry department. Challenger was picked out of two car loads of steers to be used as a subject for class instruction. He weighed 1,755 pounds, a gain of 550 pounds as a result of six and one-half months' feeding.

The second prize was won by a Shorthorn steer, owned by the Iowa College of Agriculture. The college also showed a grade Angus steer that gave the champion beef carcass. Shamrock, who took the second prize last year, was picked out of a carload of feeders by a college professor.

A knowledge of the conformation of animals and the adaptability of such to specific purposes; the science of feeds and feeding; the knowledge of what to use, how much to give and when to give it; places the college man in the very front rank of the stock world to-day.

EXPERIMENTS WITH TIMOTHY

The hay and forage crops of New York are over twice as valuable as any other crop. They constitute 54 per cent of the value of all crops. For this reason, the College of Agriculture has arranged an extensive series of experiments with the hay and forage plants.

About 13 acres on one of the University farms is set aside for the timothy investigations. Up to the present time 216 samples of seed have been received from farmers and experiment stations in almost every timothy growing section of the United States. By spring other seed will be received from Norway, Sweden and other European countries, and Australia. From each sample of seed 42 plants were grown in pots, and when sufficiently rooted, were transplanted into the field in check rows 30 inches each way. Every fourth plat is a check plat, being grown from seed raised on the University farm. Continuing each row of individual plants is a drilled row.

From these several thousand of individual plants one or more will probably be found that exhibit a propensity for hardiness, productivity or vigor, or all of these. From such plants seed will be taken and the strain will be propagated first in centgener plats and afterwards under field conditions.

A test of the value of the crop from large, medium and small seed is also being conducted. The number of seeds in a pound varies from a little over 900,000 for large seeds to 2,000,000 for small seeds. Evidently there may be a great difference in the number of plants when the rate of seeding is measured in pounds. A germination test is being carried on to determine the length of time that seed retains its vitality. The effects of varying rates of seeding and of various combinations of fertilizers are also being tested. Many other laboratory and field studies are being conducted, so that when completed, an extended knowledge of the subject will be had.

The Cornell Countryman

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FEBRUARY, 1904

What Others Think of "The Countryman" A large number of enthusiastic letters have been received from former students. These encouragements are greatly appreciated by those who are trying to make the COUNTRYMAN worthy of support. Favorable press comments have also appeared. *The Agricultural Student*, published by the Ohio State University — the pioneer among agricultural college magazines, extends the following hearty welcome: "We are in receipt of the first number of THE CORNELL COUNTRYMAN, a new agricultural college publication from Cornell University. If the initial number is a criterion of the future character of the magazine, we predict for it a large success. It is to be published monthly, and its board of editors comprises both students and alumni. We are pleased with the name, the cover, the make up, and especially with the general tone of the reading matter. Surely no agricultural college is more able to support a creditable publication than Cornell, and a bright future for the periodical is almost assured."

In speaking of the first number *The Demeter* says, "It is replete with very valuable agricultural information.

Several articles are contributed by men who are leaders in the profession, and subjects of timely interest are placed before the agricultural public with a view to keeping up their support and co-operation. The editorial page is especially bright and interesting and contains a strong plea for the establishment of agricultural high schools in connection with the state universities."

An Agricultural Building Needed

Cornell has a great agricultural college, perhaps the greatest in America. Its faculty has been increased and strengthened. It is giving free college training to several hundred men on the Campus and reaches many thousands through its various kinds of extension work. Yet it has no building where this work can be centered. The different departments are scattered all over the Campus wherever a vacant niche can be found. We have no room large enough for all the agricultural students to meet for general lectures. The library has to be stacked in the business office, where there is no room for students. The necessary card indexes are not arranged for use, for there is no place to put them. A reading room is a luxury not to be thought of. The agricultural museum contains material that would be of value in giving instruction, but it has to be stored away in barns and basements. This year a great effort has been put forth to make the best use of the last square inch of room. The dairy building, which is large enough to accommodate 50 students, has been remodeled so as to try to provide for 100 winter dairy students in addition to the regular classes in dairying, animal industry and poultry husbandry. About 200 stu-

dents are trying to work in a space intended for 50. The work on soils is carried on in the assay laboratory. Here no apparatus can be set up permanently as the room can be used during the first semester only. The work of the Farmers' Reading-Course and the Farmers' Wives' Reading-Course is tucked away in the cellar of Morrill hall. Even here there is not room, and one typewriter works out under the steps. But the lack of room causes the greatest loss by entirely excluding work that would otherwise be done. If the state provides a building, a school of agriculture similar to those in the universities of the Middle West will probably be established. These give two or three years work for the hundreds of farm boys who lack the time or money to take a regular college course. Later there will certainly be other such schools in New York, but the University must lead the way.

But there is no need for argument when a fact is so apparent. The College of Agriculture has the faculty, the students and the equipment for a great agricultural college, but needs more buildings for its large and growing work. That it is the duty of the State Legislature to provide these, is hardly to be questioned. The only appropriation that the state has made for its Agricultural College was one of \$50,000 for the present dairy building. It also appropriates \$35,000 for extension teaching in agriculture, but provides no buildings or facilities for carrying on the work. The reading courses, the nature-study, the winter courses and the co-operative work with farmers are no longer experiments, and it is time that the state provide room and facilities for carrying them on. New York is far behind every

other great agricultural state in making provision for agricultural education. The lawyer, the doctor, the engineer, all have opportunities for education in their chosen fields of work; but the farmer's son who desires to learn the scientific principles of modern agriculture must be turned away as there is no room for him.

What Other States Have Done

The following statistics have been furnished by the agricultural colleges of the various states. They show the amount of state aid, but do not include the income from the Land Grant Acts or otherwise from the National Government.

The Iowa College has been provided with many buildings. Last year \$100,000 was spent and \$200,000 has been appropriated for a central agricultural building. It receives \$120,000 per year for running expenses. The last legislature voted \$600,000 for the next five years (a one-fifth mill state tax), to be used for buildings. Minnesota gives \$113,000 per year for instruction and research in agriculture, and has given \$685,000 for buildings, \$300,000 of which was appropriated by the last legislature. Michigan has \$365,000 invested in buildings, and gives \$100,000 per year for running expenses, about \$40,000 of which is saved annually for buildings. Ohio supports its agricultural college, and has given it a \$120,000 building. Illinois has provided buildings with nearly two acres of floor space, and appropriates \$135,000 per year, about \$25,000 of which goes to provide more room. Wisconsin has spent \$316,000 for buildings, Nebraska \$135,000. But we do not need to go West to find that agricultural education is provided for. The last legislature of Pennsylvania

appropriated \$100,000 for a dairy building, and pledged \$150,000 more to complete the agricultural building. Every New England state gives money to its agricultural college. Massachusetts has buildings costing \$375,000.

The following table shows the relative ranks of the states in agricultural wealth and the amount which the state has given for buildings for its agricultural college. Two or three have given more than the amount indicated.

	Rank	Buildings
Minnesota	12	\$685,000
Massachusetts	28	375,000
Michigan	14	365,000
Wisconsin	10	316,000
Iowa	2	300,000
Pennsylvania	5	250,000
Illinois	1	200,000
New York	4	50,000

The Governor's Message

Early in the fall Governor Odell made a thorough inspection of the College of Agriculture. That he appreciates the necessity of scientific training for the farmer can be seen from his message to the legislature, in which he says: "It has been the policy of the state to secure and disseminate such information as might be of benefit to the farming interests of the state. Laws have been enacted and rigidly enforced for the protection of food supplies against adulteration with the object of guarding the health of the people and of securing to the farming interests such advantages as they are entitled to. Competition with the richer lands of other states makes scientific farming to-day more necessary than ever before. A thorough understanding of our resources and the necessities of our cities is important, because it will make the farming industry more

profitable and consequently of greater benefit to the commonwealth. We have now two institutions in the state which devote attention to agricultural interests, one working along on experimental scientific lines and the other teaching the science of farming. Other commonwealths have contributed largely in support of agricultural education, and it is important that we should also make adequate provision for this necessary instruction. There have been many applications from the agricultural interests for such recognition. Without making any specific recommendations as to the line which you should follow I do desire to impress upon you the necessity for complying with these demands, which I believe to be reasonable and in the interest of New York."

Speaker Nixon's Address

In his opening address to the Assembly Speaker Nixon makes a strong plea for a just recognition of the demands for agricultural education.

He says, "The establishment of a state agricultural college is a subject which should engage our special attention this session. We call ours the Empire State, but we are far behind other states in this respect."

He quotes statistics to show what other states are doing, and briefly summarizes the financial condition of the College of Agriculture. "New York is the only state in the Union in which an agricultural college of high rank has been founded and developed from the first without direct backing of the state. This condition ought not to continue. We should maintain a state agricultural college equal to the best in the Union. It is for our interest to do so, and our large agricultural population and the amount of capital invested in their industry, which is

the basis of all prosperity, constitute a claim that should no longer be ignored. The value of farm property in this state is over a billion dollars. The value of our agricultural products in 1900 was more than 245 million dollars, or about \$34 per capita for all the people in the state."

The Value of Co-Operative Experiments One of the very interesting features of the meeting of the Experimenters' League was the summary of the opinions of experiment station directors on the value of co-operative work. A large number are of the opinion that such work is of very doubtful value. "Farmers cannot be depended upon to carry out the conditions of an experiment. They guess at results or judge by appearances instead of making accurate weights or measurements. They will judge the effect of a certain fertilizer, for instance, more by the appearance of the straw or vines, than by the yield of grain or potatoes, which is seldom accurately known." But, as Professor Bailey says, "The fact that farmers cannot experiment is the very reason for the existence of this kind of work. Every farm is an experiment station, and every farmer the director thereof." Every crop and every field is made the basis for conclusions, but these conclusions may be the very opposite from what the crop really shows. Probably no one thing is the cause of so many failures among farmers as the lack of accurate observation. If the co-operative experiments teach the farmer to observe carefully, they will pay both financially and educationally. We cannot always judge of the value of an experiment by the reports sent in. Sometimes the experiment that is

a failure so far as the report is concerned does the experimenter a lot of good. For instance, one of the members of the League was persuaded to keep a record of the production of each cow in his large dairy. He found that he had a number of unprofitable animals. By selling these and buying a smaller number of good ones he is now getting more milk than formerly and is saving \$50 per month in feed. Yet he made no report.

The work is of value in disseminating information. Many men are not sufficiently impressed by the printed page to be lead to put its suggestions into practice. What they see upon their neighbor's farm has much more influence than what they read concerning results obtained at the experiment station. The demonstration experiments become centers of infection, so to speak, from which the improved practice spreads.

All such work brings the experiment station and agricultural college closer to the people. The bulletins come to mean more, and their advice is more likely to be followed. It benefits the scientist by keeping him in touch with the farmer's problems.

There is, however, an occasional farmer who will be so accurate in his work that his results will have scientific value. There should be a number of these in the League, composed as it is of men who have had some training in agricultural colleges and of others who are anxious to get what training they can at home.

Work on Apples

The New York Experiment Station at Geneva is soon to publish an important work on apples. It consists of the data collected at that station for

the last 15 or 20 years. Much of it is the result of actual experiments carried on by the station; some is from information collected elsewhere. It contains a description of about 600 varieties of apples accompanied by 160 colored plates and about the same number of half tones. The work is principally that of Professor S. A. Beach, who is well known as a horticulturist not only in our own state, but also throughout the country.

The Loss of Fertility Due to Cities

The Westminster Review presents an article on "The Physique of the Present and the Evolution of the Future." The writer, Mr. A. R. Hunt, states, what is generally believed, that the town left to itself would degenerate; and the vitalizing supply of bodies and brains from the country is being "increasingly dissipated in the towns." He inquires what the result would be if the country failed to supply the "raw material," and finds a partial answer in history, which shows that "All the greatest cities of the world have partly or entirely perished." The city contains the germ of its own destruction. It first depopulates and then sterilizes the country.

This matter of sterilization is an interesting point, the means of which doubtless concerns chiefly agricultures more thriftily conducted than our own. The annual fertilizing value of a unit of population in England is estimated to be about \$2, and that of a horse about \$21. It would not be to overestimate the value of both combined to place it at \$2.50 per unit of population. This would make the annual value of the products lost to the world's available fertility through the sewers of London about \$12,000,000. London and other cities flourish for the mo-

ment at the cost of the future prosperity of the grain-producing areas. The writer says that the eastern states of our Union have already suffered from the exportation of food-stuffs; and that the permanent deterioration of other regions is, through the same means, but a question of time.

GENERAL AGRICULTURAL NEWS

The student judging contest at the Chicago Live Stock Show resulted in a victory for the Iowa Agricultural College. This is the third consecutive year that this college has held the much coveted Spoor trophy. The Ohio State University came second. Twelve classes of stock, three each of cattle, horses, sheep and swine were judged by the teams. The \$500 for individual prizes was distributed as follows: \$200 to students from Iowa, \$105 to those from Ohio, \$75 each to Kansas and Minnesota, and \$45 to farmers' sons. The Angus steer shown by Minnesota won \$800 in prizes. Stock exhibited by the Iowa College won 49 prizes amounting to over \$1,600. They may feel a just pride both in their students and in their stock.

* * *

Several agricultural colleges have established a two weeks' course in grain judging, stock judging and feeding. This is in addition to the winter course in agriculture, which usually last about three months. The work is intended for busy men who cannot leave their farms long enough to attend the regular winter courses. Its popularity is shown by the very large attendance—in some cases as many as 1,000 have attended. Iowa, North Dakota and Illinois gave such work last month.

* * *

New Mexico levies a two-fifths mill tax for the support of its Agricultural College. The last legislature changed the levy from one-fifth to two-fifths of a mill.

CORNELL NEWS

CAMPUS NOTES

The rooms occupied by the College of Agriculture have been completely overhauled and so changed that the former student would scarcely recognize them. The business office is removed to the first floor. The College of Forestry room is now "Uncle John's" headquarters. The most important change, however, is in the establishment of an agronomy laboratory in the room formerly used as a business office. All the rooms have been rearranged, cleaned and painted. Important changes have been made in the dairy building, which have the effect of considerably increasing its capacity. The cheese room and locker room have been remodeled and the entire east end of the first story will hereafter be used for giving instruction in cheese making. The lockers have been removed to the hallway and attic. The old cheese-press and store room is used for giving instruction in handling market-milk. It is equipped with modern appliances for bottling, and the milk served on the University route is being handled through it daily. Other changes have been made so as to better utilize the space. As a result of these changes and a rearrangement of the courses it is possible to give instruction to over 100 winter students, double the number heretofore admitted.

* * *

The site for the proposed Hall of Agriculture is bordering the quadrangle in front of the Veterinary Building. A new avenue extending west from the quadrangle will be laid out. This will give the buildings a very favorable location at the end of the avenue.

* * *

There are 90 registered in the winter dairy course and 43 in the winter course in agriculture, a total of 133 as compared with 106 last year. The average age of the agricultural students is 20 years, and of the dairy students 27 years.

Sage Chapel has been remodeled. All the fall services have been held in Barnes Hall, because the interior of the Chapel was in the hands of workmen. For the first time this term the building was opened for services on January 17, Dr. Lyman Abbott of New York City officiating. The Chapel is so changed that it hardly seems the same place. The seating capacity of the west end is enlarged. A new choir loft has been built into the north end with a capacity for seating one hundred people. The pulpit is new and is on the left side of the apse instead of the right, as formerly. It is of beautiful white carnstone from Italy. The sides of the pews have all been renewed and stained with Flemish oak. The aisles and the wide panel in front of the apse are stone mosaic, the pattern of the symbolic vine running all through it. Probably the most striking change of all is the decoration of the walls and ceiling. The walls are covered with burlap and then painted terra cotta. The woodwork of the ceiling is stained with Flemish oak and decorated with old gold, turquoise blue, dull red and white. From a background of intertwining vines appear twelve symbolic figures, repeated until they cover the ceiling. As one looks upward he is spellbound by the splendor and mystery of it all.

* * *

Arrangements have been made with the department of farmers' institutes whereby students in the poultry department will have an opportunity to hear several eminent poultrymen. T. F. McGrew of New York city, a writer and poultry judge, will speak February 9. J. H. Drenstedt, editor of the *American Fancier*, is expected to be here at the poultry show to give a demonstration of scoring. T. E. Orr, secretary of the American Poultry Association, and manager of the poultry department of the St. Louis Exposition, will speak early in March.

The Governor's Message reviews the work of the College of Forestry, the work in the Adirondacks and the discontinuance of the College. He closes with the following recommendations to the Legislature: "The question therefore is before you, and to the Legislature we must accordingly look for such action as will properly protect all interests. Cornell University undertook this work at the request of the state and as such was its agent. In so doing it has made contracts for which it is primarily responsible, but which responsibility as the agent of the commonwealth it should not be called upon to assume. Neither should the school it founded be discontinued, because with the lapse of years a proper understanding of scientific forestry will become more and more a necessity. This is particularly true of farm forestry, which will form an important part in the future of agriculture within the state."

* * *

The dairy department is now supplied with 14 separators, including the United States, Sharples, DeLaval Simplex, National and Reed. This gives the students an excellent opportunity to study the character of the various makes.

* * *

The recent additions to the departments of animal husbandry and poultry have done much toward making them more nearly complete. During the fall there have been added to the equipment: two Guernsey cows, one Guernsey bull, two Ayrshire cows, one Ayrshire heifer, together with the five Herefords, five Galloway, three Shorthorn and three Angus steers mentioned in last issue; also the following sheep: five Dorsets, five Rambouillets, five Delaine Merinoes, one Cheviot ram, one Southdown ram, two Southdown ewes. The poultry department received the following: thirty-seven White Wyandotte pullets, thirty Barred Plymouth Rocks, thirty-five White Plymouth Rocks, thirty-five Brown Leghorns and seventy White Leghorns. This department

now has on hand 500 fowls, representing the following eight breeds: Minorcas, Buff Cochins, Golden Wyandottes, Plymouth Rocks, Leghorns, and Pekin, Indian Runner and White Muscovy ducks. A. R. M.

* * *

Instruction in bottling and standardizing retail market milk is being given this year for the first time. The four year men are taking work in special dairy investigations, one hour of practical work and one of seminar. The latter consists of critical reviews of dairy literature. The large number of winter dairy students has necessitated an increase in the number of assistants. Mr. W. E. Griffith, instructor in butter making is assisted by A. A. Schotzhauer of the 1903 winter dairy course. Laboratory instruction is in charge of H. C. Troy and G. A. Bell. W. F. Buringame, 1900 winter dairy course, is assisting in the work in cheese making.

* * *

Several elections of officers have occurred during the past month. From the number it might seem as if everyone would have an office, but such is not the case. The Agricultural Association elected C. S. Wilson, president; H. F. Button, vice-president; G. W. Tailby, Jr., secretary; J. M. Robitzer, treasurer; H. E. Ross, librarian. The winter dairy students have organized a club with Fred W. Ferris, president; W. L. Markham, vice-president; P. D. Rosebloom, secretary; S. A. Dugan, correspondent; E. S. Davis, J. E. Kelley, J. H. Bliss and J. I. Klein, entertaining committee. The winter course in agriculture has formed a "Bailey Club," their president is M. B. Baker; vice-president, C. C. Osborn; secretary-treasurer, H. R. Way. The Cornell Poultry Association has elected the following directors: C. A. Rogers, president; Miss H. A. Elsworth, vice-president; J. M. Robitzer, secretary-treasurer; H. E. Kinne, superintendent; James J. Halpin, R. L. Cushman, F. H. Ryan, O. W. Hill and F. V. Shearer.

FORMER STUDENTS

The following came from out of town to attend the Agricultural Experimenters' League of New York, which met Jan. 8, 9.

Professor L. C. Corbett, '90, of the Bureau of Plant Industry, U. S. Dept. of Agriculture; Charles H. Royce, '91, farm manager of the estate of L. P. Horton, Danville, Pa.; E. D. Baker, 63 Richard St., Rochester, W. W. Bassett, '03 winter, Farmer; William C. Buell, '98 winter, East Bloomfield, H. W. Devaul, North Manlius; Joseph Deyo, '02 winter, Gardiner; H. T. Field, '98 winter, Oneida; H. D. Gage, '03 winter, South New Berlin; D. D. Gordon, '03 winter, Rushford; O. W. Hill, Webster; N. F. Hopper, '96 winter, Ithaca, H. F. Hubbs, '02 winter, North Manlius; A. C. King, '99, Trumansburg; W. E. King, '01 winter, South Kortright; F. N. McLaury, '03 winter, Stamford; C. M. Royce, '01 winter, Phelps; F. A. Salisbury, '03 winter, Phelps; Asa H. Smith, '92 special, and E. W. Smith of Clifton Springs; J. H. Stone, '96 winter, Marcellus; B. O. Wakeman, Trumansburg; R. Winship, '01 winter Moscow, Pa.; H. B. Winters, '01 winter, Smithboro; Alexis York, '03 winter, and A. L. York of Poolville, N. Y.

'93, Special.—Edwin C. Powell of Springfield, Mass., who for the past four years has been an associate editor of the *American Agriculturist* weeklies, has recently become managing editor of *Farm and Home*. Mr. Powell has a small farm at Longmeadow, where he is making a specialty of poultry and fruit.

'99, Graduate.—J. C. McDonald, '97 B. S. A., Toronto University, is editor of the agricultural department of the *Toronto Mail and Empire*, weekly edition. In the December COUNTRYMAN, under the heading, class of 1901, we said that J. C. MacDonald was editor of the *Transvaal Agricultural Journal*. This should be corrected to read William MacDonald. Both are editors of agricultural papers, J. C. MacDonald in Canada and William MacDonald in South Africa.

'99, Winter.—Norman E. Jack of Chateaugay Basin, Quebec, Canada, writes for subscription, and says that he is much pleased with the COUNTRYMAN, and that it is destined to fill a long felt want.

'00, Special.—Henry H. Albertson spent two years at Cornell, coming to us from near Philadelphia. During 1901 and 1902 he combined work in the office of the *Farm Journal* of Philadelphia with work on the farm in the summer time. He is now starting a fruit farm of 65 acres near Taughanock Falls, N. Y., and extends a cordial invitation for all Cornell countrymen to stop and see him when they visit the falls.

'00, Ph.D.—Kary C. Davis, '91 B. S., '94 M. S., Kansas Agricultural College. After leaving Cornell Mr. Davis was professor of horticulture at the University of West Virginia until November, 1902, when he accepted his present position as principal of the Dunn County School of Agriculture, Menominee, Wis. This school of agriculture, which is one of three such high schools supported by the State of Wisconsin, is one of the most important experiments in secondary education in the United States.

'00, Winter.—George R. Schrauber, Clifton Hill Farm, Ballston Lake, N. Y., says the Cornell news department of the COUNTRYMAN is worth the subscription price to anyone who has attended Cornell and come under the influence of such strong, broad-minded men as Professors Bailey, Roberts and others of the staff.

'01, B. S. A.—Harry M. Knox, Canton, N. Y., is manager of the Knox's Success Stock Farm, which breeds Holstein-Friesian cattle, Berkshire swine and Scotch collies. He attended the National Grange at Rochester as mentioned in the December COUNTRYMAN, and recently has been appointed worthy master of the Silas Wright Grange at Canton, N. Y., and secretary of the St. Lawrence County Pomona Grange. Knox's letters are full of the Cornell spirit and enthusiasm that mean better things for the agriculture of New York State.

'01, M. S. Agr.—M. F. Miller, '00 B. S. in Agr., Ohio State University, is now assistant in agronomy at the Ohio State University and editor of *The Agricultural Student*.

'02, Special.—B. V. Colburn, Bemus Point, N. Y., has had entire management of his father's farm of 100 acres during the past season. We are glad to know that his income exceeded what he had planned for, and that in a financial way, at least, the year has been completely successful.

'02, Dairy.—Henry A. Gifford, Windham, Green Co., N. Y. On leaving Cornell Mr. Gifford took charge of the Mt. Vision Creamery for the rest of the season of 1902. He is now running the Windham Creamery in the heart of the Catskill mountains.

'02, B. S. A.—A. G. Lauder leaves his duties as assistant in chemistry to accept the position of chemist to the La Plume Condensed Milk Co., Scranton, Pa.

'03, B. S. A.—A. W. Cowell resides at Springdale, Pa., and is head draftsman for J. Wilkinson Elliot, landscape architect, Pittsburg, Pa.

FIRST DAIRY CLASS, 1894

(Continued from last issue)

Steven Shea, Fayetteville, N. Y. served seven years in the creamery business, but has now purchased a 103 acre farm one mile from the village of Fayetteville. He is located in the alfalfa district, and is making a specialty of dairying and stock raising.

Ansel D. Parker, Otego, N. Y. After leaving Cornell, Mr. Parker accepted a position with the Borden's Condensed Milk Company, then known as the N. Y. Condensed Milk Company, in their branch factory at Oxford, N. Y. He left the employ of the company in January, 1902, but is now foreman of their new branch started last April at Otego N. Y.

Robert J. Ross, Greene, N. Y., followed cheese making for a few years and then entered the employ of the Lyon's Iron Works. He learned the moulder's trade, and is still working for the company in this capacity.

William D. Saunders, Blacksburg, Va. In 1896 Mr. Saunders received the appointment as assistant professor of dairy husbandry at the Virginia Agricultural College, afterwards known as the Virginia Polytechnic Institute. Mr. Saunders now holds the position of adjunct professor of dairy husbandry and superintendent of the creamery.

FIRST WINTER COURSE, 1893

J. C. Baird, Clyde, N. Y., was the prime mover in starting a skimming station at Clyde. He is now running this for the Clyde Creamery Co. in addition to his farm work.

W. S. Blakeman, Clyde, N. Y., R. F. D. 5, remembers well the winter of '93 and thinks that every young man who hopes to own a farm ought to take a course in agriculture. He is located on a hundred acre farm five miles south of Clyde. Among other things he has had good success with early lambs for the New York market.

Wm. Bugbee, Gasport, Niagara county, N. Y., says Niagara county furnished four students for Cornell's first winter course in agriculture. For the past two seasons Mr. Bugbee has done considerable spraying for the neighborhood with his gasoline spraying outfit.

Harry Bull, Campbell Hall, Orange county, N. Y., has been engaged in farming ever since he left Cornell, first for his father and now for himself. He is renting 275 acres and producing milk for the New York market.

John M. Bloomingdale, Troy, N. Y., R. F. D. 4, followed dairying until 1898, but is now raising timothy hay. Being near Albany and Troy, he sells to customers who are glad to pay a good price for a good clean product.

B. J. Cole, of the Cole and Fish Star Creamery Co., Willink, N. Y., is a busy man, and in his reply to our letter he goes right to the point with the cheering statement, "Yes, of course, I want the CORNELL COUNTRYMAN." Mr. Cole was also in the dairy class of '96. He is now farming 230 acres of land and running four cream-

eries. He has two other Cornell dairy men working for him.

W. J. Hall, Youngstown, N. Y., R. F. D. 20, has a farm on the bank of the Niagara River, one mile south of Youngstown. He has a private siding on a trolley road running through the farm and says that he has the finest location that anybody could ask for. We are glad to hear a man speak this way. We have heard Professor Bailey say that there are just as many "best places" in this world as there are people. This gives us all a chance with Mr. Hall.

Spencer Hungerford, Berkshire, N. Y., R. F. D. 1, is starting in on a new farm near Speedsville, N. Y. Barring the drought of last summer his crops have been good. We wish him all success in his new location.

James A. McClure, Alva, Wood county, Oklahoma. This is a voice from the wheat fields of the West. Mr. McClure and his brother own one-half section of land, have drilled in 193 acres of wheat this fall, and believe Oklahoma is a fine place to live. The only thing he lacks is THE CORNELL COUNTRYMAN, to keep him in touch with America's leading school of agriculture.

Guy C. McEwen, Lawrenceville, St. Lawrence county, N. Y., has been engaged in dairying since leaving Cornell in 1893. He has a dairy of 40 cows, runs a separator, and makes butter. Mr. McEwen has the interests of Cornell at heart, and has written to Albany once, at least, urging the appropriation for an agricultural building at Cornell. He has tried to send some young men down to Cornell, but says he may not succeed until his two boys are old enough to attend. He hopes that long before this the college will be equipped with the best agricultural buildings in the United States.

M. S. Myers, Barnerville, N. Y. Since the winter of 1893 Mr. Myers' occupation has been farming and stock raising. Six years ago he bought his father's farm and herd of red polled cattle. He has been breeding for a high dairy standard, until he now has one of the best herds of the breed in

the East. Mr. Myers closes his letter with "three cheers for THE CORNELL COUNTRYMAN."

Albert O. Potter, Leonta, Delaware County, N. Y. Mr. Potter and his father are proprietors of the Prospect Stock Farm, and breeders of thoroughbred Guernsey cattle, and Barred Plymouth Rocks, and White and Brown Leghorn fowls. They also have a private creamery, and make a speciality of fine butter for family use.

William D. Richardson, Fredricksburg, Va., is secretary and treasurer of the Richardson Pickling Co. Personally Mr. Richardson is engaged in the cultivation of the soil in a small way, for his home is just outside the city limits on Marye's Heights, and embraces twelve acres, one-half of which is suitable for garden and small fruit.

C. J. Spurr, Sherburne, N. Y., is engaged in general farming, but has a dairy of fifty cows, and is a patron of Borden's Condensed Milk plant at New Berlin, N. Y.

M. W. Welch, Savannah, N. Y., R. F. D. 2, is one of the enthusiastic fruit growers of Wayne County.

Charles W. Wright, Ouaquaga, N. Y. Since leaving Cornell Mr. Wright has been handicapped for several years on account of ill health. One season he managed the East Maine Creamery. He worked in the Lestershire shoe factory for two years and a half, but was obliged to return to the farm on account of ill health. He has a one hundred acre farm and a dairy of grade Jersey cows. His milk goes to the Ouaquaga Creamery, and tests the highest of any in the neighborhood.

A. Phelps Wyman, 115 School Street, Brookline, Mass., took the winter course in '93, entered the College of Agriculture that fall as special, but graduated in the regular course in agriculture in '97. He spent several years in landscape gardening work, but found that artistic planting is but a secondary matter to the real art of landscape architecture. As a result he is now at the Massachusetts Institute of Technology taking work in engineering, and especially in architectural and landscape designs.

BUSINESS NOTES

On account of the fact that Mr. James McLaughlin spends nearly all his time in France and speaks the French language as fluently as his native tongue, the breeders of Percheron and French Coach stallions give him every possible advantage. Each time he goes to France he is able to buy a better lot than ever before.

As the McLaughlins will save some of the last lot to show at the Louisiana Purchase Exposition next year, the French breeders have especially favored them this time.

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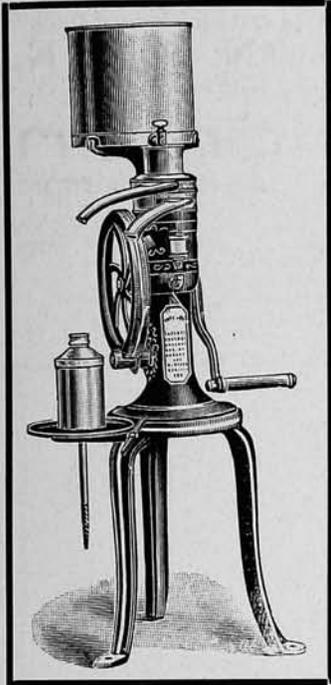
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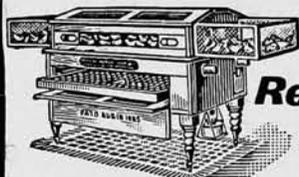
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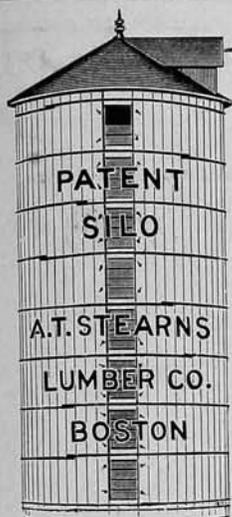
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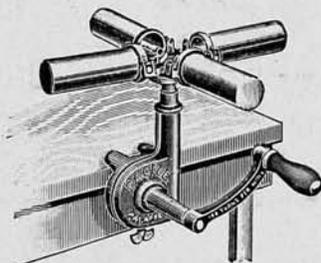
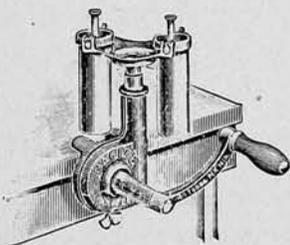
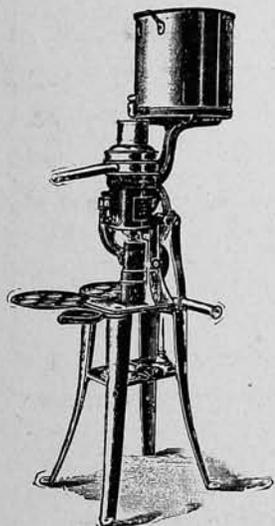
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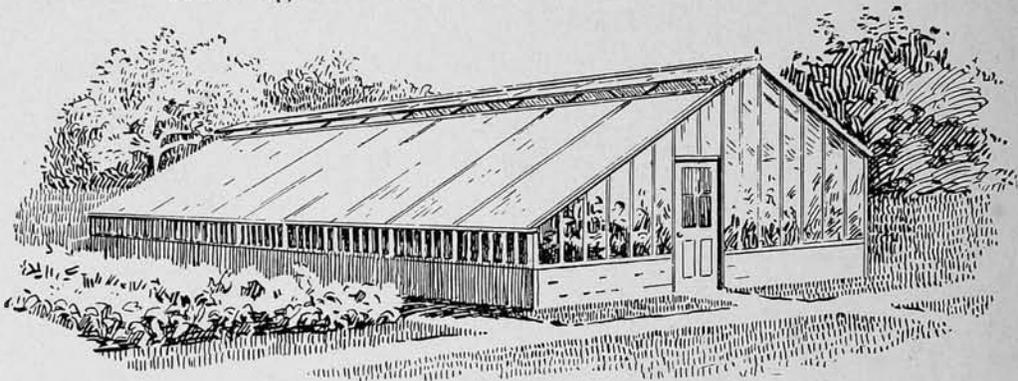
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VOL. 1

March 1904

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The Cornell Countryman



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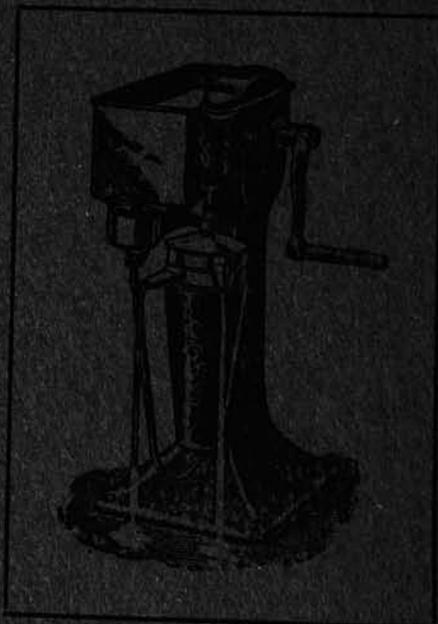
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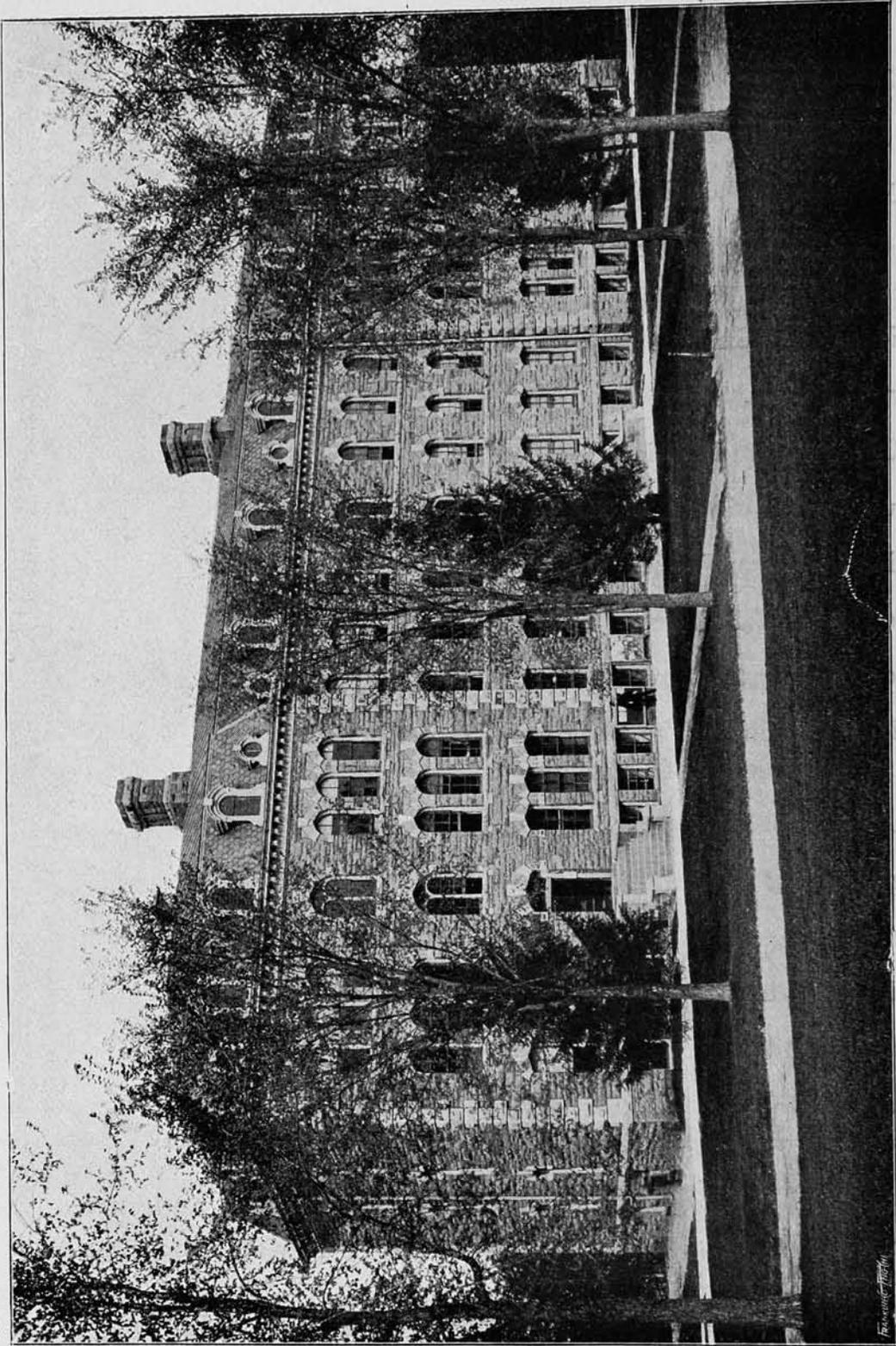
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Frederick H. Thomas

THE CORNELL COUNTRYMAN

Vol. I

MARCH, 1904

No. 4



THE PLOWMAN MAY BE THINKING WHILE HE WORKS

THE FARMERS' READING-COURSE MOVEMENT

II. THE IDEAL FARMERS' READING-COURSE

By S. W. Fletcher

Assistant Professor of Extension Teaching in Agriculture

THE Farmers' Reading-Course is not a recent enterprise. Ever since the establishment of agricultural colleges it has been felt that some means should be provided for reaching the farmers who were not able to attend these colleges. This feeling has found expression in Farmers' Reading-Courses and in Farmers' Institutes,—two lines of work which have a common aim and which should be more closely affiliated than has been the case heretofore. The first Farmers' Reading-Course of which we have authentic record was established in 1882 by the Agricultural College of Ontario. Farmers' Reading-Courses are now conducted by the Agricultural Colleges of Pennsylvania, Connecticut, Michigan, New York, New Hamp-

shire and South Dakota. The Agricultural Colleges of Indiana, Rhode Island, Texas, Missouri, Tennessee, Virginia and Massachusetts have each established a Farmers' Reading-Course at some time, but have now discontinued it, chiefly for the reason that the farmers did not appear to take an interest in it.

Some of these courses have been moderately successful along certain lines. None of them, including the Cornell Farmers' Reading-Course, has by any means attained to the ideal of what such a course should be, partly through a misconception of the work to be done and partly through insufficient time and funds with which to conduct the work. The ideal Farmers' Reading-Course is merely the opinion

of a person, and this ideal may not be realized in a generation; then it will be no longer the ideal Farmers' Reading-Course because the ideal will have advanced. The writer can merely outline some of the main features of his ideal.

The ideal Farmers' Reading-Course is flexible and democratic. It tries to help all farmers, no matter what may be their degree of intelligence, who desire to learn and to improve their farming. It tries to meet the needs of the farmer who is behind the times as well as the farmer who is up to date. It gives encouragement to the beginner as well as advise to the expert. It tries to help the man who says "farming does not pay," and the man who says "my farm pays me well." This means that the Farmers' Reading-Course is not a definite, prescribed and limited course—a single groove which all must follow—but that it is flexible and adaptive and gives careful attention to the personal needs of each reader.

The reason why some attempts have not been more successful is because they have shot too high. They have outlined very elaborate courses of reading on various agricultural subjects, sometimes recommending books and bulletins whose every page fairly bristles with technical words. Some of these Farmers' Reading-Courses would almost stagger a graduate of an agricultural college. Some of the best educated farmers have been able to use these courses with profit, but they have not appealed to the vast majority of farmers because they are too technical. The majority of farmers have not yet formed the reading habit. They take one or two farm papers and read them quite regularly. Perhaps they occasionally look over an Experiment Station bulletin, but it is my observation that fewer farmers actually read Experiment Station bulletins than is commonly supposed. Aside from this they read very little on agricultural subjects. Nothing could be more impractical than to ask these men to wade through several 300-page books, most of which were written from the point of view of the teacher rather than that of the farmer. It is a misfor-

tune that so many of our agricultural books smack of the lecture room rather than of the soil. The farmer who tries to read them is quick to notice this.

The ideal Farmers' Reading-Course, then, not only suggests a course of reading for those whose experience and education has qualified them to read books and bulletins understandingly, but it also prepares more elementary reading matter for those who would not be interested in this advanced reading. The Cornell Reading-Course Lesson is an effort in this direction. The Lesson should be short—not over eight pages—pithy, practical and abounding in illustrations drawn from farm life. They should be printed on good paper and well illustrated, so that they will catch the eye and invite the attention of the farmer who "is not much of a hand to read." They should be written in the language of the farm, not of the university, and hence are best written by practical farmers, not by teachers. Technical words and long tables of figures should be scrupulously avoided. These Lessons should discuss the principles of agriculture, which can be applied everywhere, not mere practice, which is local and conflicting. The essentials should be distinguished from the non-essentials by difference in type.

The Reading-Course Lesson should not be a syllabus of a book; it should be an illumination of a few very important points. The talk of a successful Farmers' Institute worker may be taken as a type of what the Farmers' Reading-Course Lesson should be. The Institute worker who tries to condense a book into half an hour's talk, stuffing his audience with facts and figures, usually fails to make a "hit." His associate, who states only a few facts and weaves many illustrations around them, leaves his audience well pleased and hungry for more. The Reading-Course Lesson should aim to interest and inspire even more than to instruct. Very little about farming can be told in an eight-page pamphlet, but if we can once get the interest of a farmer by means of these short, readable, well illustrated lessons, it will not be difficult to draw him on to further reading.

Accompanying each Lesson should be some questions on the subject discussed, which the reader should be asked, not required, to answer. There are several features about this "Quiz," as it is called in the Cornell Farmers' Reading-Course, which must be considered very carefully. Such simple, even foolish, questions as "what is food?" and "what is food used for?" should never be included. Farmers very quickly, and I believe justly, resent this imputation to them of childish ignorance. Neither should the questions be those which may be answered by referring to certain para-

graphs in the Lesson itself. Those which are answered should be looked over carefully and returned immediately to the reader, with helpful comments on the answers.

The ideal Reading-Course shows progression. The specially prepared and elementary Lessons will have failed in their mission if they do not lead the reader to take up more thorough reading on that subject. At the end of each Lesson, and especially at the end of the series, a list of literature on that subject should be given, and the reader urged to secure it and continue his reading along that line in connection with the Reading-Course.



A FIELD MEETING

graphs in the Lesson itself. As a correspondent has said, "farmers do not like to be examined like school children." I believe that the questions on these elementary Lessons should be mostly those which will draw out the personal experience of the reader and stimulate his observation. The Quiz should not be a catechism. In more advanced reading, when books and bulletins are used, and where a certificate is desired, an examination is necessary; but it is out of place here. The Quiz as an examination paper disheartens many farmers whose interest has been awakened by reading the lessons. In any case, the Quizzes

Arrangements should be made for supplying books at a discount to Reading-Course members, and free bulletins. But it is not enough to simply recommend books. The Correspondence Course of the Pennsylvania State College has an excellent plan of sending to the members of their Course, with each book recommended, a short outline which explains and emphasizes its most important points and gives the gist of the book in a form easily remembered. The reader should be urged to write to the Reading-Course bureau frequently about his work, and especially to ask any questions about knotty points. These

letters should receive prompt and painstaking attention. The elementary Farmers' Reading-Course has now merged into the more advanced reading, called at Cornell the Correspondence Course. This is where some Reading-Courses begin, but it is half way up the ladder; neither is complete without the other.

So far as possible, the members of the Farmers' Reading-Course should be grouped in Reading Clubs. The flame of interest always burns brighter if there are several to attend the fire. Anything which can be done to bring

better than large ones, for all the members should have an opportunity to take part in each meeting.

The club idea should undoubtedly be a leading feature of the Farmers' Reading-Course. It has been the Cornell experience that much greater interest is aroused in clubs than among isolated readers. The individual, not the club, should remain the unit of the course, but a large amount of correspondence may be saved, and a closer touch with the readers secured, if they are in Clubs. Reading-Course meetings give an opportunity for the officers of



A FARMERS' READING-COURSE CLUB

the farmers together for the purpose of talking over their mutual interests is a long step toward correcting the greatest fault which they have, as a class. A Reading Club is formed when a number of neighboring farmers desire to meet together regularly for the purpose of talking over the Lessons and exchanging experiences. Some Granges are organized as Reading Clubs and use the Lessons in their meetings. Some of the best Cornell Reading-Clubs meet from house to house, and are the center of the social as well as the educational life of the farming community. Small clubs are

the Course to meet more of the readers than would be possible otherwise. In the ideal Farmers' Reading-Course at least one good man who understands farmers, and fully sympathizes with their special difficulties, should be in the field all the time organizing Reading Clubs, talking with the farmers about their reading and helping them wherever he can. It is personal contact which counts most; farmers cannot be helped successfully at long range.

The next step is the traveling library. At Cornell this part of the work is conducted with the co-operation of the

State Librarian in Albany. From 10 to 100 books may be sent to a group of people, usually a Reading Club, on payment of a nominal sum which scarcely covers the express charges. These books may be kept six months and may then be exchanged for others. Not over one-third should be on agricultural subjects; the others should be the world's best literature on history, science, biography, travel and fiction; books which make for a broader outlook and higher culture.

The ideal Farmers' Reading-Course is closely associated with the Farmers' Institute work. They are co-ordinate lines of education and should be conducted with particular reference to each other. The logical outcome of a Farmers' Institute is a Farmers' Reading-Club, in which the enthusiasm generated at the meeting shall be carried on throughout the year. Many of the best Institutes in New York state are held in communities where there is a Cornell Farmers' Reading-Course. Conversely, many of our strongest Reading Clubs are formed at Farmers' Institutes. Although it may not be expedient for the Institute work and the Reading-Course to be conducted by the same bureau, there should be a spirit of mutual helpfulness between the two. The Institute workers should lend their efforts to the organization of Reading Clubs wherever they go, and the Reading-Course officers, who are necessarily unable to go out among the farmers as much as Institute workers, should seek the advice of the latter as to how the Reading-Course may be best conducted. I look forward to a more perfect correlation between these two lines of work in the future.

The salient features of the ideal

Farmers' Reading-Course appear to me to be these:

1. It is progressive. It aims to constantly lead the readers to take up more thorough and more advanced reading in the subjects which interest them most.

2. It is flexible. It provides elementary reading for the beginner and more advanced reading for those who are fitted to receive it. The reader is more important than the system.

3. It is personal. The needs of each individual reader should be studied. He should be invited to write to the editor frequently. He should be urged to ask questions about the Lessons or on any other farm problem which puzzles him. These personal letters should be answered promptly and carefully. The correspondent should be made to feel that he has a friend, not merely an instructor, in the editor. The more of this personal element there is in Farmers' Reading-Course work, the more successful it will be.

4. It should make for higher living as well as better farming. With the advent of the Traveling Library, the Farmers' Reading-Course becomes a means of culture as well as training. In it the readers are introduced to books which broaden the horizon and raise the ideals of life. If the Farmers' Reading-Course did nothing but help a man to till the soil better it would still be worth while; but since it tries also to make him a better citizen and a broader man, it appeals to me as one of the most important movements which have been conceived and executed in the spirit of altruism.

AN OLD ENGLISH FARM SONG

Let the Wealthy & Great,
Roll in Splendor & State,
I envy them not I declare it;
I eat my own Lamb,
My Chickens & Ham,
I shear my own Fleece & I wear it.

I have Lawns, I have Bow'rs,
I have Fruits, I have Flow'rs,
The Lark is my morning alarmer;
So jolly Boys now,
Here's, God speed the Plough,
Long Life & success to the Farmer.

WHAT OUR INSECT ENEMIES COST

By M. V. Slingerland.

Assistant Professor of Economic Entomology

A RECENT insect bulletin from the United States Department of Agriculture ends with this statement: "It costs the American farmer more to feed his insect foes than it does to educate his children." Mr. F. M. Webster makes this startling comparison after twenty years of experience in investigating and fighting injurious insects, and statistics support his conclusion. A very conservative estimate puts the yearly loss from insect depredations in the United States at one-tenth of all the farm crops, and this amounts to the enormous sum of \$300,000,000, and this is only about \$52 for each farm. A recent estimate by experts put the yearly loss from forest insect depredations at not less than \$100,000,000. The common schools of the country cost in 1902 the sum of \$235,000,000, and all higher institutions of learning cost less than \$50,000,000, making the total cost of education in the United States considerably less than the farmers lost from insect ravages. Thus it would be within the statistical truth to make a still more startling statement than Webster's, and say, that it costs American farmers more to feed their insect foes than it does to maintain the whole system of education for everybody's children.

Furthermore, the yearly losses from insect ravages aggregate nearly twice as much as it costs to maintain our army and navy; more than twice the loss by fire; twice the capital invested in manufacturing agricultural implements; and nearly three times the estimated value of the products of all the fruit orchards, vineyards, and small fruit farms in the country.

We dare not hazard a guess and have no data on which to base an estimate as to how much American farmers are now spending in time and money in the warfare against their insect enemies. It would surely aggregate a sum that would startle us. But

at least 125 entomological workers are now devoting most of their energies and spending probably \$250,000 in the United States in studying injurious insects and devising methods for preventing such enormous losses to American farmers. Massachusetts spent more than a million dollars in trying to exterminate the Gypsy moth, and Congress has just appropriated \$250,000 to fight the Boll-weevil and other troubles in southern cotton fields. Farmers are trying to feed to insects over 2,000 tons of Paris green annually in the United States.

The statistics for New York state also offer some interesting comparisons along this line. The total value of all farm and forest crops, excluding animal products, in New York in 1899 was \$150,000,000, and the one-tenth that the insects got was worth \$15,000,000. It may seem incredible that it costs such a sum to feed New York's injurious insects every year, but it is an average of only \$66 for each of the 227,000 farms in the state; and there are few farms where the crops are not lessened more than this amount by insects. It is admitted that the Codling-moth alone ruins \$3,000,000 worth of apples and pears yearly in the state, and in 1901 the Hessian-fly took half of New York's wheat crop, thus robbing the farmers of \$3,500,000.

From the statistics we glean that their insect foes cost New York farmers each year about one-half what they pay for labor and fertilizers; as much as they get from their potato crop; or for their wheat and corn crop combined; or for all their barley, buckwheat and oats; or as many dollars as there are apple trees in the orchards of the state; or as much as the fruit-growers get from their orchards, vineyards, and small fruit farms.

How much New York farmers are spending in fighting insects, we have no means of knowing, and a guess might be far from the truth, but many

are spending from \$100 to \$500 or more in the warfare every year, so that the aggregate is probably larger than we realize. Twelve to fifteen entomological workers are now spending about \$35,000 in investigation and inspection work in the state yearly to devise ways and means for checking the ravages of insects.

Finally, New York is spending a little more than \$40,000,000 yearly on

its entire school system, or about \$6 per capita. As about 1,000,000 people are living on the farms in New York, the farmers' share of this great educational fund is about \$6,000,000. One may say, therefore, that it costs New York farmers more than twice as much to feed their insect foes as it does to pay their share of the cost of maintaining the schools for educating their children.

SOIL SURVEYS IN THE UNITED STATES

By Jay A. Bonsteel

Professor of Soil Investigation (Detailed from the United States Bureau of Soil)

DURING the early days of the American Union, there was much more land than there were people to fill it so that the interest in the problems of soils and crops centered chiefly in the selection of crops which could be profitably grown under the climatic conditions existing in any given regions. Still there were some who became uneasy in regard to what they considered the "running down" of the land. As the yields of staple crops in the seaboard states decreased and as the population increased, a migration westward was started which settled Kentucky, Tennessee and Ohio. The emigrants were interested in securing fertile lands, and, being shrewd progressive people, they used certain criteria in judging whether the lands of the new domain were suited to the production of the crops with which they were familiar. So they examined the soils to discover whether they were sandy or clayey; they ascertained whether they were black and loamy with decaying vegetable matter or the reverse; they carefully observed the kinds of timber growing and the luxuriance of other wild vegetation. Of course accessibility of location, ease of clearing, supply of wood and water, and defensibility frequently could alone be taken into account, but a more or less accurate conception of soil conditions also

formed an element in the choice of lands.

These pioneers were the first Americans who classified soils, mapped them in their own imaginations and settled according to the results of their seeing and judging.

In 1798 or 1799 the New York State Agricultural Society employed Dr. Samuel Mitchill to examine and report on the soils of the state, and upon its agricultural resources. The results of Dr. Mitchill's investigations were published in the New York Medical Repository for 1800, et seq., vols. 1, 3 and 5.

Between 1820 and 1830 the states of Maine, Massachusetts, New York and North Carolina organized agricultural surveys. In New York State the legislature empowered the formation of a New York State Agricultural and Geological Survey, which made its first report in 1838. The state was divided into four districts under different geologists, and notes on soils and agriculture accompanied the reports of the geologists. The report of William W. Mather on the first district in the first volume of the survey reports is particularly good. It recognizes the influence of the physical and chemical properties of soils and emphasizes the possibility of recognizing in the field, important differences between soils. The final prepar-

ation of the report on the Agriculture of New York State was placed in the hands of Dr. E. Emmons of Williams College. Dr. Emmons made many chemical analyses of New York State soils, correlated or attempted to correlate the soils of the state with what was then known of its geology, and published a rough general map of the soil provinces of the state. The report forms the first of the four volumes on Agriculture in the Natural History of New York. Dr. Emmons was later employed on a similar work in North Carolina.

Among other states active in soil investigation at this time were Rhode Island and Vermont, where chemical analyses were also made. The appearance of Baron Liebig's work on Agricultural Chemistry exerted a potent influence on the character of the work done during the '40s and '50s.

The position of agricultural chemist for the state was established in Maryland in 1847, and the chemist was required to visit each county, spending one month in it, and to enter each election district. He was to analyze specimens of each variety of soil which might be brought to him or he might find to exist. He also investigated marls and other fertilizers. These analyses are at present only of historic interest.

In 1850 Dr. David D. Owens and Dr. Robert Peters began extensive chemical investigations of the soils of Kentucky. Their work was really the inception of the systematic chemical examination of soils in this country.

Beginning in 1858, Professor E. W. Hilgard started an actual areal survey of the soils of Mississippi. He not only employed a correlation of soil materials with geological formations, but also made extensive chemical investigations, and in addition took into account the character of native vegetation as indicating the properties of soils. In 1875 he began the work on the Soils of California, which he has pursued since.

He prepared soil maps of the cotton states for the tenth census of

1879-80, and Killebrew, one of his co-workers, examined tobacco soils.

In 1892 many correlations of soils with geological formations were prepared by different states for exhibition at the World's Columbian Exposition. Maryland prepared, in this year, the first soil map based on the texture and physical properties of soils. The work was done by Professor Milton Whitney, now chief of the Bureau of Soils, United States Department of Agriculture, in co-operation with the Johns Hopkins University authorities.

In 1897 Dabney of the Tennessee Experiment Station made extensive studies of the soils of that state, and published a bulletin and a map which correlated the soils with the geological formations. The bulletin gives not only chemical analyses but also mechanical analyses made by Professor Whitney.

A year later the Division of Soils at Washington made a map of the soils of the Hagerstown valley, Maryland, which has never been published, although the text of the accompanying report was published by the Maryland Agricultural College.

With the year 1899 the work of the soil survey under federal direction began. Methods for the field determination and classification of soils had been devised. These methods were based chiefly on the physical properties of soils such as their texture or coarseness of grain, their structure or the arrangement of grains, on their drainage and to some extent upon their content of organic matter. At the same time methods were devised for field determination of the amounts of alkali found in the arid western soils. Two divisions of the United States were recognized: the humid regions, where it is only necessary to prepare a soil map; and the arid regions where it is frequently necessary to map alkali as well as soil conditions. During the field season of 1899 areas were surveyed or reconnaissance made in New Mexico, Texas, Utah and Colorado of the western division, and in Connecticut and Maryland of the east-

ern division. The publication of the maps and reports on these areas was followed by an extensive demand from other areas for similar surveys. Congress met the demand by specific appropriations which have been continued and greatly increased in succeeding years.

Since 1899 areas have been surveyed in nearly every state and territory, and in Porto Rico and the Philippines. A total of over 34,000,000 acres has already been surveyed, and nearly 300 different types of soils, based on physical properties, have been established.

Co-operation of various kinds by different state organizations has been sought. Thus the Maryland Geological Survey, the State Board of Agriculture of North Carolina, the Louisiana, Utah, Illinois and Ohio experiment stations and Cornell College of Agriculture have all secured federal co-operation in soil survey work of some kind. The recognition of the importance of the work is well shown by the appropriation of \$25,000 by the legislature of Illinois to enable the Illinois station to co-operate in field work and to follow the field mapping by experimental work on farms selected on the more important soil types.

The field work consists in classifying the soils as sands, sandy loams, loams, clays, etc.; in mapping the boundaries of the types established; in ascertaining the best adaptation of various crops to the different soils; in investigating special problems of drainage, of alkali reclamation, of crop introduction, of fertilization, of crop rotation and of farm management; and in reporting an accurate record of the present agricultural condition of the various areas.

The federal Bureau of Soils is not restricted in its investigations by local boundary lines and can generalize its observations on soil types from work done in many different states. Thus the study of soils adapted to various grades of tobacco can be carried on in a wide range of states, and a type of soil suited to the culture, for example of a given grade of wrapper tobacco,

can be mapped in all states where it exists under suitable climatic conditions. In this way the experience of one locality is made available for the direction of other localities.

Again by the mapping of soil types any special information as to crop rotation, the desirability or undesirability of the use of certain kinds of fertilizer on the soil and in general the results of carefully conducted agricultural experiments can be applied with much greater directness and force in regions remote from that in which the original information was gained. A fertilizer experiment means much more to the farmer if he knows the results reported were secured on the same kind of soil he is tilling. Otherwise it means little.

In New York state the following areas have been surveyed by the Bureau of Soils: the Westfield area, comprising northern Chautauqua Co., in 1901; the Big Flats area, in Chemung Co., in 1902, and the Lyons area, in Wayne Co., in the same year; in 1903 the Syracuse-Baldwinsville area and 750 square miles of the western end of Long Island. It is hoped in the near future to increase greatly the amount of territory which can be covered annually in New York state through the co-operation of the Cornell College of Agriculture and the Bureau of Soils. At the same time the young men of the college will be able to secure training in the classification of soils, the modern methods of soil investigation, and in actual field soil survey work. The work will also serve as a basis for certain lines of crop investigation.

The fruit industry of the state, the production of alfalfa, the raising of sugar beets, the reclamation of little esteemed sandy lands, the investigation of market-gardening and trucking soils and other interests as they are presented will be studied not only as relating to soils but also, by the efforts of the University staff, in regard to the other elements which affect crops and the welfare of the entire population.

COW PEAS AS A SOIL RENOVATING CROP

By *J. L. Stone*

Assistant Professor of Agronomy

SOME items of interest relating to the growing of cow peas in New York are brought out by the co-operative experiments conducted by the extension department of the College of Agriculture. On the college grounds and in most localities in the state where the soils are of the better class for crop growing, the cow pea has not seemed to thrive or promise as good results as does the soy bean, but in the sandy soil of Schenectady and Saratoga Counties the result are reversed and the cow pea promises to become of great value as a soil renovating crop. Many of these sandy areas, though once productive, have, through the loss of organic matter, as the result of long, continued cropping and perhaps bad management, become very barren—in some cases not having produced a farm crop in a dozen years. Cow peas planted upon these soils produce fair crops for green manuring purposes—frequently enabling the farmer to secure a fair crop the following season.

A notable fact in this connection is that the first season that the crop is planted on a given field the nodules upon the roots are few—sometimes it is difficult to find any, but the second

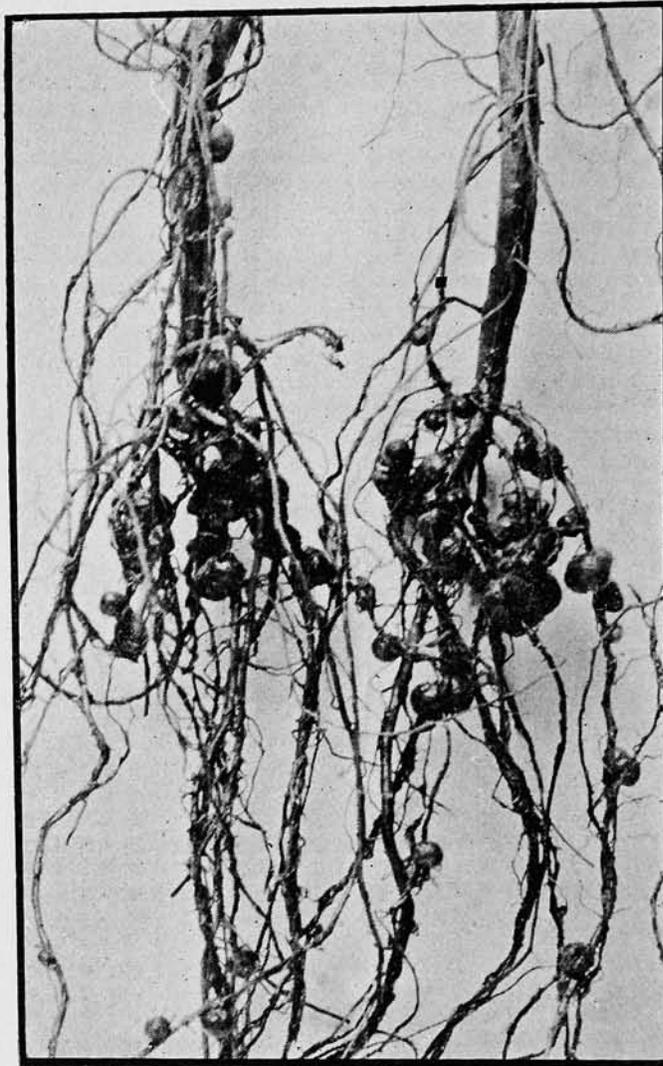
planting upon the same soil results in the production of nodules in great abundance. The illustration, which is of roots grown in southern Saratoga county the past season, shows this well. The supposition is that at the first planting some of the bacteria peculiar to cow peas are introduced into the soil with the seed, but not

enough to produce abundant inoculation. By the time of the next planting these have multiplied and disseminated themselves through the soil so as to produce the result illustrated. In one case where a moderate dressing of a complete commercial fertilizer was used the number of nodules present was about doubled. Though it was the first time cow peas were planted on this plot, the nodules were fairly abundant on the unfertilized part.

Soy beans grown in the same soil seem very little inclin-

ed to produce nodules, and it seems probable that artificial inoculation must be resorted to before the latter crop can demonstrate its value as a soil renovator.

At Ithaca neither cow peas or soy beans developed nodules the past season, though planted the second time on the same ground. This may have been due to the cold wet weather.



NODULES OF COW PEAS

A FEW GENERAL PRINCIPLES WHICH INFLUENCE THE KEEPING QUALITIES OF FRUIT IN COLD STORAGE

By G. Harold Powell.

Pomologist in Charge of Fruit Storage Investigations. United States Department of Agriculture

THESE has been little attention given to the general principles governing the production and handling of fruits to give them long keeping qualities. Horticultural investigations have usually ceased with the production of the crop, and the problems connected with its handling and marketing have been considered of a commercial rather than of a scientific nature. In recent years especially an increasing amount of attention has been given to the chemical and physiological changes in fruits from their earliest life to old age and decay, and in this phase of the subject, the principles governing the behavior of fruits in cold storage have received more serious consideration. Investigations of this nature are only in their infancy, but considerable information of importance has already been brought out.

Before the subject can be understood, a fruit must be considered as a living organism. It passes through a life cycle just as a human individual does, and, like the latter, is subject to diseases like the scab and bitter rot, which may cut it off in the prime of life. Like any other organism, its characteristics are profoundly modified by its environment in early life. The character of the soil modifies it, the climate, the altitude, the season, the care of the orchard. These things produce wide variations in different lots of the same variety growing in different orchards, and influence the rapidity with which the fruit passes through the remainder of its life after it is severed from the tree. It is probably safe to enunciate the general principle that any condition in the environment of the fruit which causes it to grow with unusual rapidity or to abnormal size, causes it to pass through its life after picking relative-

ly faster than the same variety when grown more slowly. Quick acting sandy soils, virgin soils, rich bottom lands, excessive tillage with a large waterholding capacity in the soil, quick growing young trees—under these conditions a variety may be expected to have a relatively short life history in storage. In fact there may be a difference of two months in the keeping quality of the same variety grown under different conditions in the same orchard, even if the subsequent handling of the fruit is the same. In the future the fruit storer will need to give more attention to the influence of the orchard conditions on the ripening of the fruit, and in the light of this knowledge handle it from the warehouse accordingly.

To have the best keeping quality and to give the greatest satisfaction to the consumer, fruit should reach full growth and high color on the tree, and still be hard when picked. It has then developed its finest flavors and most delicate aromas; it passes through the remainder of its life relatively slower than immaturity picked fruit; it is less likely to shrivel, and is more resistant to certain storage troubles like the apple scald. It is fallacious to suppose that fruit must be harvested prematurely to insure the longest keeping quality.

As soon as fruit is picked all of its physiological and chemical activities are accelerated in an apparent effort to provide for its reproduction through the ripening of the seed. The rapidity of ripening appears to be proportional to the height of the temperature. If the weather is unusually warm, the ripening processes proceed with corresponding rapidity. They progress more slowly in cooler temperatures.

If the fruit is to be stored, it is necessary to place it quickly in the

cool temperature in order that a large proportion of its remaining life may not be spent in the period between the picking and the storing time. Delaying the fruit in the orchard in warm weather, in piles or in packages, delays in transit, or at the railroad terminal—under these conditions the fruit may have progressed through a large part of its remaining life history before the storage house is reached; the diseases may also have progressed with corresponding rapidity, and the life of the fruit in the warehouse is shortened to that extent.

The chemical and physiological processes in the fruit are retarded to the greatest extent in the lowest temperature in which the fruit can be stored safely without freezing. A temperature of 31 degrees F. to 32 degrees F. retards ripening more than higher temperatures, and lengthens the life of the fruit in the storage house correspondingly. Higher temperatures are satisfactory, if the fruit is to be sold early in the season.

All fruits are not equally adapted to cold storage treatment. The quick

ripening summer fruits are likely to lose their aromas and flavors unless stored in a pure atmosphere. They readily absorb the odor with which they come in contact, and as they are usually removed from the warehouse in warm weather, they deteriorate quickly. Peaches may be stored satisfactorily a week or ten days under favorable conditions, and berries a few days only. But the storage of the tender fruits should be considered only when it is desired to avoid temporarily an oversupplied market, or when it is wished to lengthen the season of a particular fruit for a few days.

Quick ripening summer and fall fruits are injured most by delays in storage, as an hour between the tree or vine and the warehouse means more in the life history of the fruit than a day would mean to a slow ripening winter apple. The summer fruits need storing in small packages from which the heat of the contents can be radiated quickly; and the life of the fruit is lengthened by the use of a fruit wrapper which makes the spread of disease from one fruit to another much more difficult.

THE EXPORT TRADE IN APPLES

By L. H. Weld

A Graduate Student in Agriculture

DURING the last few years there has grown up a steadily increasing demand in foreign markets for American grown apples—particularly in England, Scotland and Germany. Especially has this been true since 1896 when, because of the large crop and consequent large exportations, American apples were first brought within the reach of the common people abroad and their superior quality universally recognized.

Early shipments abroad were not always successful, due to delays in transportation, lack of refrigeration facilities, inexperience in packing for ocean transportation and finally to lack of knowledge of the demands of for-

foreign markets. We are slowly gaining knowledge and experience, however; cold storage is available on several lines, and, though the trade is still in its infancy, we now export in good years about three million bushels out of an annual average production of 176 million bushels. Careless grading and packing is still the chief cause of failure. On this point California fruit growers have long been setting Eastern growers a commendable example, but without seeming effect. In summer they ship tender fruit across the continent and even into Europe where it arrives in good condition. Though Eastern grown fruit ought to arrive in better condition, and, being of su-

perior quality, ought to sell better, provided it were equally well grown, graded and packed. The isolation of Eastern growers is to their disadvantage. Many of them are small growers and the orchard is often but a side issue. They have no local organizations which can secure uniformity in grading, and handle fruit enough to gain a reputation for particular brands. Consequently the regrading for export is largely done by storage firms. The Canadians, our competitors for the British market, are fast learning the importance of grading and packing for home as well as for foreign markets, and all fruit is inspected before being sent abroad. Their "Fruit Marks Act, 1901," specifies that every closed package of apples shall bear the name of the variety, the name and address of the packer, the quality of the fruit (indicated by No. 1, No. 2, No. 3, or XXX, XX, X), and that the face shall give a fair representation of the whole package. Packages marked No. 1 or XXX shall contain well grown specimens of one variety, of good color for the variety, of normal shape, sound, of uniform size, not less than 90 per cent free from scab, worm holes and other defects, and properly packed. Uniformity is of great importance in British markets, where apples are retailed by the pound, and it is of great advantage that they should run so many to the pound. What size matters little so long as they be uniform in the barrel, but they prefer the well grown medium sizes to the large ones—three to the pound being a favorite number.

All apples for export should certainly come up to the Canadian No. 1 standard. Some packers will make two or three grades of this class: one of large, high-colored, perfect specimens and another of those of medium size.

These may profitably be wrapped in paper and packed in boxes holding a bushel. In this way the apples of the Northwest are packed for export. In 1901 the Bureau of Plant Industry began sending to London trial shipments of early apples like Yellow Transparent and Early Harvest, wrapped in paper and packed in the six basket Georgia peach carrier. The consignees reported that there will be a demand for such summer apples if well grown and packed. Only the choicest fruit, however, should be put in boxes—the bulk of shipments will probably be in barrels for a long time to come.

In shipping to Germany it is essential to know that inspection for San Jose scale is very thorough, and to send any fruit there not absolutely free from it not only will result in financial failure but injures the reputation of American fruit as well. In Austria also, if a single specimen of scale is found the whole shipment is debarred. Both Germany and Austria import large quantities of apples from Tyrol and northern Italy—fruit that is very well packed but of inferior quality. When these crops fail they must rely on American apples. This year both the German and the British crops were light, and our exports have been of very good quality, which will help the trade for another year. The Canadians have made trial shipments to Australia via Vancouver, but the result was a failure due to lack of refrigeration in crossing the tropics. Some shipments have been made to China, but good packing is necessary, and the demand is mostly limited at present to the foreign residents. With the development of the Pacific carrying trade it is probable that in Hawaii, Australia, China and Japan permanent markets may be found for the products of the fruit growers of the Northwest.

"Who does his duty is a question
 Too complex to be solved by me,
 But he, I venture the suggestion,
 Does part of his who plants a tree."

—Lowell.

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MARCH, 1904

New Scholarships—The State Grange

Nothing is more significant in the movements that are taking place in farmers' organizations than the growing sympathy with agricultural education. It can be said with truth that the farmers of New York State now stand for the best special and technical education. The discussions of the past two or three years have brought all these educational questions out of their semi-dormant state, and the entire advance guard of the rural population is alert on the subject. The last meeting of the New York State Grange, in Cortland, early in February, contributed a distinctly new feature to the educational movement in voting to establish four Grange scholarships in the College of Agriculture at Cornell University. The details are left to a committee, but the movement itself is important because it is an innovation in educational affairs, and because it sets new problems before the subordinate granges of the state. It is expected that these scholarships are to be awarded as the result of competition between granges. The following plans have been suggested and are under consideration. They seem likely to be adopted in their essential features:

1. Scholarship to be awarded to the county showing the largest per-

centage increase in membership during the year;

2. Scholarship to be awarded to the county showing the largest percentage increase in new granges.

3. Scholarship to go to the subordinate grange showing the largest percentage increase in membership and attendance.

4. Scholarship to be awarded to the boy or girl having the best record for scholarship and best attendance at grange.

It is difficult to overestimate the good that may be accomplished by such a movement as this. It will provide financial aid to worthy boys and girls; introduce a stimulus to intellectual effort amongst farm boys and girls; establish a closer union between the grange and the College of Agriculture, resulting in benefit to both, and spreading the desire for new educational methods; increase the membership in the grange. We believe that this marks a very important departure in grange enterprise, and that it puts the New York State Grange to the very front in matters of education for farmers.

But the State Grange did more than this. It passed a strong resolution calling upon the legislature to pass the bill providing for suitable buildings for the College of Agriculture at Cornell University. It was also committed still further to the enterprise by the attendance of three of its highest officers on the hearing on the bill in Albany, February 9th. Two of these persons spoke for the measure—the Master and the Secretary. The Grange membership is large in New York State, and the grange movement is growing both in numbers and efficiency. It is concerning itself effectively in all public policies that affect the rural districts, and its face is enthusiastically towards the future.

**Values of
Farm Property**

Our agricultural wealth is scattered. We see here and there a large farm, but no individual business that can compare with the largest factories. The farm presents innumerable small enterprises, the factory a small number of large ones. For this reason, the factory makes a great impression on us and we assign undue importance to it. A few statistics from the last census show the importance of the farmer's business. The value of farm property in the United States was over 20 billion dollars, while the capital invested in all forms of manufactures was less than 10 billion. The number of working horses and mules on the farms was over 18 million, while the total horse-power employed in American factories was a little over 11 million. Last year we were greatly impressed with the importance of anthracite coal. The value at the mine of the annual production of hard coal is a little over 75 million dollars, but even so small an item as the annual production of eggs gave twice this amount. If there should be a strike in the egg industry, it would be more serious than the anthracite strike.

**The Farmers'
Balance of
Trade**

Much has been said about our "balance of trade," and how important it is that this be favorable. From most of the newspaper discussions of the subject we would infer that the favorable balance is due to our great and growing manufactures. A recent circular from the Department of Agriculture gives statistics on the question.

More than two-thirds of our exports are farm products. During the thirteen years, 1890-1902, the average annual excess of exports of farm products over imports was \$337,000,000.

In the same time there was an adverse balance in products other than those of the farm amounting to \$62,000,000 annually. The farmer offset this unfavorable balance and had left \$275,000,000 as a credit to himself and to the country.

During the past year there was a decrease of over 30 per cent in exports of dairy products, as compared with 1902, and a marked decrease in exports of meat and live animals. Cotton gave a substantial increase. Some of the more important increases in imports were in sugar, molasses and wool. The business of 1903 gives a comparison much more favorable for the farmer than does that of the preceding thirteen-year period. The exports of farm products exceeded imports by \$422,000,000,—a sum sufficient not only to offset the unfavorable balance of \$56,000,000 for products other than those of the farm, but to leave \$367,000,000 to the credit of the nation when the books of the international exchange were balanced.

**Texas Cattle
Fever**

The Texas cattle fever has been added to the long list of diseases that can be prevented by inoculation. Recent numbers of the *Review of Reviews* and of the *Demeter* contain articles on the subject. The disease is not confined to Texas or even to our southern states; but is prevalent in South Africa, South America, Australia and southern Europe, under different names.

For over half a century it has been the ban that has prevented the improvement of southern cattle. Texas was first stocked with cattle from Mexico. These were of very poor quality—better adapted for speed than for beef. Progressive cattlemen of the South have imported valuable pure-blood

animals only to see the great majority of them die.

Nothing was known in regard to the cause of the disease or the manner of its transmission until the subject was taken up by the Bureau of Animal Industry in 1889. It was found to be due to a micro-organism that destroyed the red corpuscles of the blood. It was also shown that the disease was transmitted by infected ticks and in no other way. The suggestion was made that it might be possible to immunize cattle by producing in them a mild attack of the fever by controlled tick infection. No practical use was made of this knowledge till 1897, when the Texas Agricultural College began inoculation experiments, using blood drawn from healthy native cattle. This method is better than controlled tick infection, for the germs seem to gain an added virulence in the body of the tick, just as the malaria germ does in the body of the mosquito.

Since then progress has been rapid. Eight experiment stations in the South have taken up the subject, and have inoculated nearly 5,000 cattle. Less than eight per cent of these have subsequently died of fever. The cattle thus immunized are mostly pure-bloods. They have been scattered throughout the states and will have a potent effect in the improvement of thousands of herds. The Alabama station has recently imported and inoculated several car-loads of Herfords, and they will be sold at auction in June.

This discovery means much to the South. It means the passing of the longhorn "Texas steer," and the coming of the Herford and Shorthorn. The last census report gives the average value per head of all neat cattle in Iowa as \$26.55, in Texas \$17.31, in Georgia \$9.82. If these southern cat-

tle can be raised to the level of the Iowa cattle, it will add millions of dollars to the wealth of the South.

The first bunch of steers of the purely beef breeds, that was ever shipped to Chicago from Louisiana, left the Agricultural College at Baton Rouge last January. These animals were purchased in Illinois when calves. They were immunized against the fever and were grown and fattened on molasses, cotton seed meal, rice bran and native hay, all Louisiana products. This car of steers "topped the market" on the day sold—a substantial credit to the college. Director Bailey was so much impressed with this work on visiting Louisiana last spring that he commended it in the commencement oration at the Louisiana University.

Docking of Horses

A bill to make the docking of horses' tails illegal in the District of Columbia has passed the House of Representatives. Those that are already docked are to be registered, and no more are to be brought into the District. It is to be hoped that the Senate will also pass the bill. A docked horse may have a happy time so long as he is the property of a wealthy man, but when he ceases to lift his feet high enough, and takes his place on some hack and later on a dump cart—well, he is an old horse then, so let the flies bite.

The question is much broader than its humane side, which has doubtless been overestimated by some. It is merely one detail of a great movement. We are gradually emerging from the age when men considered distorted plants and animals more beautiful than natural ones. The tree sheared into some grotesque form is

coming to be less and less common. Men do not now often bend and graft trees into fantastic devices. We are coming more and more to appreciate the individuality of plants and animals as well as of men. Time was when the gardener sheared all his shrubs to one form, and pruned his trees to one style. Some still do so, but the number is growing who believe that the pruning should be of such a nature as to preserve the individuality of the plant. The same forces that are trying to preserve the beauty of our natural scenery should strive to preserve the natural beauty of our animals. Those who love horses third-hand—through a coachman and groom—may consider the docked tail an improvement; but for one who has loved a real horse first-hand it is different. Can you imagine Rosa Bonheur painting a "Noble Charger" with a bobtail?

**Profits of
Garden and
Orchard**

In the February *World's Work*, Mr. B. T. Gallo-way, Chief of the Bureau of Plant Industry, has an inspiring article on intensive horticulture. The horticulturist raises perishable fruits and vegetables, and to offset the risks he takes, he must bring science and experience to his aid. By concentrating attention on details and management, he may make a living from a single acre; or by the application of the same principles on a large scale, may become a "peach king."

An instance is given of a western man, who, on a single acre, made a profit of \$1,000 a year from strawberries, celery and garden vegetables. To do this he had to work constantly, with both hands and brains. Rotation of crops was practiced even on this small area. Stable manure en-

riched the land, and phosphates made his berries firm and bright. His celery was kept from disease by the practical application of the discoveries of the laboratory. This was a striking instance of the fact that the union of scientific and business knowledge gives success.

An eastern man made his living from two acres of grapes. The needs of the market were carefully studied, varieties selected whose fruit would ripen in succession. Spraying was done for fungi and insects. The fruit was bagged to make its ripening perfect.

The wornout farms near the large cities present an excellent field for the horticulturist. Virgin soil is rare, and is not as important as good markets, facilities for rapid transportation and ability to secure labor. One man who had been employed in scientific investigation, bought five hundred acres of wornout land near Washington for three dollars an acre. With no available capital to improve his farm, except what he could save from each year's crops, he gradually increased the fertility of his soil, and planted orchards of apple, pear and peach trees. To-day the farm is worth fifteen thousand dollars, and is rapidly increasing in value as the trees are coming into bearing.

Side by side with scientific knowledge, must be up-to-date business practices. Packing, storing, shipping, all play important parts. Cold storage has lengthened the fruit seasons. The government has aided fruit growers in securing European markets, and our peaches are beginning to be shipped to London. Mr. Gallo-way concludes by urging the young man to come East and go into horticulture.

GENERAL AGRICULTURAL NEWS

The first text-book of agriculture published in the United States was printed in Ithaca in 1837, by Mack, Andrus and Woodruff.

* * *

The Bureau of Forestry has been asked to make working plans for the management of 1,300,000 acres of timber lands for the Weyerhaeuser Timber Company of Washington. The field work will begin next summer. The Northern Pacific Railway Company has also requested that the bureau prepare working plans for its enormous holdings in Washington and Idaho. This work is done "in pursuance of investigations in forestry, and in order to disseminate a knowledge of improved ways of handling forest lands." The bureau pays the salaries of the foresters, and reserves the right to publish the plan and its results for the information of lumbermen and others whom it may concern. The owner of the tract pays the expenses of living, travel, etc.

* * *

Hon. H. C. Adams of Wisconsin, has introduced a bill in the House of Representatives to provide for an increased annual appropriation for agricultural experiment stations. The initial increase named is \$5,000, with an additional \$2,000 a year until a total of \$15,000 is reached. These funds are "to be applied only to paying the necessary expenses of conducting original researches or experiments bearing directly on the agricultural industry of the United States." At present each state receives \$15,000, an amount entirely too small for the work to be done.

* * *

Vermont, the home of Justin Morrill, the father of the Land Grant colleges, has been forced to close the doors of its dairy school for lack of funds. In twelve years of existence it has turned out 600 students. May the state legislature be made to see its mistake and provide means to continue the education of the farmers' sons.

The Agricultural College of the University of Missouri is to start a publication to be called the *Missouri Agricultural College Farmer*.

* * *

The government of Rhodesia, South Africa, has established an experiment station.

* * *

A correspondence college for agriculture has been organized at Sioux City, Iowa. The courses of study offered include animal husbandry, agronomy, veterinary science, stock-feeding, stock-judging and other subjects.

* * *

The trustees of the Iowa Agricultural College have agreed upon the following items that should enter into the budget to be presented to the legislature: for increase in the support fund annually, \$100,000; for various repairs, equipment, etc., \$146,500; for increase in the experiment station funds, \$65,000; for new buildings, \$200,000; for dairy farm land, \$25,000, a total increase of \$536,500 for the biennium. The people of Iowa will doubtless see that these appropriations are made, for they greatly appreciate the work of the Agricultural College. In a public speech the governor has recommended a much larger appropriation than the above increase would make. Some interesting items in the budget are amounts for agricultural engineering, extension work, and for investigations on corn, soils and good roads.

* * *

Alumni and ex-students of the Iowa Agricultural College have formed an Agricultural Union. The society is similar to our Experimenters' League in its objects and methods of work.

* * *

A bill has been introduced in Congress to establish a Bureau of Public Highways in the Department of Agriculture. The importance of this line of investigations would seem to be sufficient to warrant the establishment of such a bureau.

CORNELL NEWS

CAMPUS NOTES

One of the most valuable features of the work of the Agricultural College this year is the Assembly. Twice every month all of the agricultural students meet in Barnes Hall. Professor Bailey speaks on some topic of interest, after which the students sing college songs and have a good time. The meetings can only be fully appreciated by those who have been there. Nothing could better unify the students and create an enthusiasm for the work and for Cornell. At the first meeting in February, Professor Bailey spoke on organization among farmers. Organization of farmers' interests is exceedingly important. Farming is the fundamental and primary occupation. From it other occupations crystallized out, and as rapidly as they have crystallized out they have organized. Farmers were the last to organize definitely. He gave a brief history of some of the earlier efforts to organize, and of the struggles and work of these societies. George Washington was one of the leaders in this work in his time. When you leave the college you should join the grange, the horticultural clubs. If there is no organization, then start one, a farmers' reading club, if nothing else. You cannot fail in that. Work for the betterment of the school, the church. Take part in the affairs of life. Sink your own likes and dislikes, and hang on.

* * *

Poultry husbandry on an equal footing with other branches of agriculture is a new departure. In view of this fact, it is very gratifying to note the interest taken by the short course students. Out of 43 students in the general winter course in agriculture, 30 chose poultry husbandry for their elective course.

* * *

A full report of the proceedings of the Experimenters' League is being prepared for the Commissioner of Agriculture with the expectation that he will publish it.

The announcements of the summer session at Cornell are now out. The nature-study outlined promises to be intensely interesting and very practical. Professors Bailey and Coulter and Mrs. Comstock will give a course of lectures on the history and development of the nature-study idea. Professors Atkinson and Coulter and Mr. Whetzel will give lessons on plant life. Mrs. Comstock will have field work with insects. Professor McMurry offers a course on the selection of materials for nature-study, and Principal Emerson treats the subject from the standpoint of the grammar schools. There will be field work in elementary earth science; how the soils are made, the work of the brooks, etc. Mr. Warren will give a course on the crops, stock and orchards of the University farm. Cornell is especially favored in its location for this study. The Campus is close to the fields and woods where the materials will be gathered, and the surrounding country is exceedingly varied in its physiography.

* * *

Hereafter the Agricultural Association will meet in Morrill Hall in the recitation room. This room has been provided with new seats and generally improved, so that it makes a pleasant meeting place.

* * *

Dr. John Gifford, who was assistant professor of forestry last year, has gone into tropical horticulture at Coconut Grove, Florida. He is growing citrus fruits. Professor De Garmo of the department of pedagogy is interested in a similar enterprise. Quite a number of Cornellians are now engaged in horticultural work in southern Florida.

* * *

C. B. Hover and Modesto Quiroga, graduates of the Ohio Agricultural College, have taken up graduate work in agriculture. P. L. Del Carrill, a graduate of the Ohio Veterinary College has also entered agriculture here. Mr. Quiroga and Mr. Carrill are from Argentina.

Former work of the Experiment Station on potatoes has had to do with investigations of the effect of tillage and spraying on yield. Mr. Gilmore is now studying the effects of various factors upon cooking quality.

* * *

The first of the series of non-resident lectures to be given before the students in poultry husbandry was given by Mr. T. F. McGrew, a noted poultry writer and judge from New York city. He spoke on preparing fowls for the show, giving in a clear, concise way the necessary steps in fitting a fowl for exhibition. The first step is in choosing the parent of the specimen. Only the most nearly perfect fowls should be mated to produce an offspring for exhibition. From the time that the chick is hatched the best care must be taken to produce a strong vigorous bird with glossy plumage and general healthy appearance. Care must be taken in feeding white birds so as not to give their plumage a yellow cast. Perfect cleanliness is required, and all birds, whether white or black, should be thoroughly washed with soap and water. Before exhibiting, the birds should be handled sufficiently to become accustomed to it. There is money in raising exhibition poultry, but the beginner should at first make it secondary to egg and meat production. Much money has been lost by men, who, without any practical knowledge of the poultry business, have built poultry palaces and started out to raise fancy birds. The lecture was thoroughly enjoyed by the students. He also gave a demonstration of scoring, and a lantern lecture on the different breeds.

FORMER STUDENTS

THE CORNELL COUNTRYMAN wants very much to get in close touch with all our former students. This means that we don't want you to wait for us, but write at once. If you have a good thing, pass it on! At least let us know where you are and what you are doing. Such information is of great value to the College as well as to

COUNTRYMAN readers. The editors earnestly request all our readers to unite in helping us with information of this kind. With all our former students loyally supporting it, THE CORNELL COUNTRYMAN can not fail of a thoroughly useful and successful career among the agricultural college publications of the day.

Ex. '72.—Wing R. Smith is secretary of the Smiths and Powell Company, which owns the Lakeside Stock Farm and Syracuse Nurseries at Syracuse, N. Y. The firm is advertised in the CORNELL COUNTRYMAN for December.

Ex. '73.—J. T. Duncan, after leaving Cornell, graduated from the Ontario Veterinary College and afterwards became professor of anatomy in that institution. In 1882 he graduated from the medical department of the Toronto University. He is now professor of anatomy in the Women's Medical College, besides holding his professorship in the Veterinary College. Dr. Duncan writes that reading THE COUNTRYMAN reminds him of the happy days he spent at Cornell. While here he roomed with Dr. Jordan, now of Leland Stanford University.

Ex. '84.—G. M. Carpenter is manager of the Farmers' Dairy Company of Wilkesbarre, Pa.

Ex. '88, B. S. in Agr.—John W. Stanford is at Warwick, N. Y., agent of the Greenwich Insurance Company.

'88, B. S. in Agr.—Leonard Pearson is dean of the veterinary department of the University of Pennsylvania.

'90, Special—H. P. Matthews has a 100-acre farm at Albion, N. Y., where he is engaged in stock raising and general farming.

'92, Special.—Fred E. Ford has a fruit farm at Elba, N. Y.

'92, B. S. in Agr.—F. L. Mulford, who returned for graduate work in 1893, is superintendent of parks at Harrisburg, Pa., and is doing good work in the way of civic improvement.

'93, Special.—Asa H. Smith is farming at Clifton Springs, N. Y., in partnership with his brother, Adeltus E.

Smith, Cornell, '89. He is a prominent granger, of which organization he has been a lecturer for the past four years. Mr. Smith attended the meeting of the New York Agricultural Experimenters' League at Ithaca, N. Y., last January.

'96, B. S. A.—Glen W. Herrick is professor of biology in Mississippi College of Agriculture and Mechanic Arts.

'96, Dairy.—W. J. Bell has been in school at Albany but expects to return to his home at Brasher Falls, N. Y., sometime this month.

'97, Special.—Arthur J. Pierpont is running a large dairy farm at Waterbury, Conn. Last June he was elected trustee of the Connecticut Agricultural College.

'00, Special.—A. L. Richie is now located at Moorestown, N. J., with Horace Roberts, a prominent horticulturist of the state. Mr. Richie has recently been visiting Mr. Albertson, Cornell, '00, of Taughannock, and a few days ago ran down to see how things were looking on the old campus. These little "home comings" of former students are good for all concerned. We wish there might be more of them.

'01, M. S., Agr.—V. H. Davis, '00 B. S., Ohio State University, is assistant professor of horticulture at the Ohio State University and business manager of *The Agricultural Student*.

'01, Winter.—O. E. Williamson. It was at a farmers' institute that Mr. Williamson first conceived the idea of taking a short course at Cornell. Since then he has held positions of trust and responsibility, first with the Baron de Hirsch School of Agriculture, and at present on the estate of Mr. J. W. Vanderbilt at Hyde Park-on-Hudson. Mr. Williamson says, "There is one feature of the good work that the College of Agriculture is doing, which, I think, should be brought before your readers and all farmers' institutes. This is the reading course lessons for farmers and farmers' wives. I know of no way in which the farmer may be more benefited, unless he or his sons pursue a course at Cornell.

'01, Ph.D.—W. M. Munson is professor of horticulture in the University of Maine.

'01, Winter.—J. C. Walker worked for his father two years, but last spring cupid got the better of him, and he now has a wife and is established as proprietor of the home farm at Linwood, N. Y.

'01, Dairy.—Francis E. Ellis is upholding the reputation of his dairy training at Cornell by the quality of butter which he is making at Rock City Falls Stock Farm. His product supplies a fancy trade in Saratoga Springs, Troy and New York city.

'02, Winter.—M. C. Jones, '03 Dairy, is in charge of the dairy on a 1,000 acre estate at Dansville, Pa., owned by Mr. John Bennett of N. Y. city.

'02, Winter.—Herbert G. Potter married Miss Mabel Gardinor of New York city, January 4, 1904. Mr. and Mrs. Potter will reside at their home on the Ridge road, Glens Falls, N. Y.

'03, Special.—Alice Putnam sends her subscription from Station H, Washington, D. C.

'03, Winter.—Walter G. Phillips is at Bristol, N. Y.

'03, Winter.—J. Raymond Dillin is at Adams Center, N. Y. He expected to attend the Agricultural Experimenters' League last January but was unable to do so.

'03, Winter.—Marvin Croop is an interested subscriber from Clarence Center, N. Y. At present Croop is not farming it, but we shall not be surprised to hear some day that he got homesick for the old farm, and is back living the strong, free life of the country again.

CLASS OF 1891

'91, B. S. Agr.—Horace Atwood, '98, M. S. Agr., after graduating was engaged for several years in farming and the operation of creameries. In 1897 he was appointed to his present position as assistant agriculturist at the West Virginia Agricultural Experiment Station. Professor Atwood is joint author of ten of the experiment station bulletins.

'91, Special.—Emerson T. Brown has a dairy and runs one of the milk routes in the city.

'91, Special.—Effe B. Earll is now the wife of Professor M. V. Slingerland. Mrs. Slingerland's colored lantern slides of insects are the finest of their kind in the world.

'91, B. S. Agr.—Charles T. French, after graduating, went into the employ of Messrs Frederick, Law, Olmsted and Company, landscape architects, Brookline, Mass. He then entered into partnership with C. E. Doffin, architect, Cornell, '90, and engaged in landscape gardening, with headquarters at 156 Fifth avenue, New York city. Mr. French spent the latter part of the spring and summer of 1896 in England, studying its parks and private country places. He is now permanently located as landscape gardener at New Hartford, N. Y.

'91, Special.—Ray T. Hazeltine followed dairy farming for three years, and then secured employment with the Standard Butter Company of Owego, N. Y. He continued in the company's employ until last spring when he was successful in civil service examinations and was appointed a substitute railway mail clerk. Mr. Hazeltine's address is Owego, N. Y.

'91, B. S. Agr.—Samuel Jeffrey is farming at Marion, N. Y.

'91, B. S. Agr.—Thomas L. Lyon went to the University of Nebraska in the fall of 1891 to take the position of instructor in chemistry and assistant chemist in the Agricultural Experiment Station. He held this position until 1893, and then went to Germany and studied for a year in the Agricultural Chemical Laboratory at the University of Gottingen. He resumed his former position at the University of Nebraska in 1894, and the following year was appointed associate professor of agriculture. Since that time he has become professor of agriculture and associate director of the experiment station. In 1898, Professor Lyon was in charge of the dairy test at the Trans-Mississippi Exposition. He is a member of the American and German chemical societies, the Society

for the Promotion of Agricultural Science, and is a contributor to the journals of these societies, and is also the author of a number of experiment station bulletins.

'91, B. S. Agr.—Wilbur J. MacNeil received his master's degree in 1892 and is probably still teaching in the high school at Petaluma, California.

'91, Special.—Henry D. Martin, '93, V. S., Ontario Veterinary College. Since 1893 Dr. Martin has been practicing veterinary medicine in Buffalo, having his office and hospital at 481 Rhode Island street. His practice is mostly city work, with quite a lot of cattle practice in dairies located near the city. In 1901 he was associated with Dr. John Wende as official veterinarian of the Pan-American Exposition.

'91, B. S. Agr.—Clarence W. Matthews was for ten years horticulturist at the Kentucky Agricultural Experiment Station. He is now professor in charge of the department of agriculture, horticulture and botany, and dean of the agricultural course.

'91, B. S. Agr.—Sherman D. Maynard is a physician at Roscoe, N. Y.

'91, Special.—Albert H. Peirson is proprietor with his brother, F. J. Peirson, of the Maple Grove Nurseries at Waterloo, N. Y. They have an advertisement in our January number.

'91, B. S. Agr.—Charles H. Royce received his master's degree in '92, and is now superintendent of Castle Grove Farms, the estate of L. P. Horton, Danville, Pa. Mr. Royce made one of the opening addresses at the annual meeting of the New York Agricultural Experimenters' League, which met in Ithaca last January.

'91, B. S. Agr.—W. E. Rumsey has been located at the West Virginia Agricultural Experiment Station since leaving Cornell in January, 1893. He is now entomologist in charge, and is also state inspector of orchards and nurseries.

'91, Special.—Frank E. Rupert upon leaving Cornell immediately took up nursery work in connection with

their firm, W. P. Rupert & Sons, of Seneca, N. Y., and has been steadily grinding away at it ever since.

'91, Special.—Wm. Salant changed to science and received his B. S. degree at Cornell in 1894. He took a year of graduate work in biology at Columbia, the following year entered the College of Physicians and Surgeons there, and graduated from the University in 1899. In 1901 he was appointed to a research fellowship in the Rockefeller Institute for Medical Research, which he held for three years. He was assistant in physiology in the Cornell Medical College of New York city in 1902-'03, and since then has been lecturer in physiology in the New York Normal School of Physical Training. Mr. Salant has published several scientific papers in European and American publications.

'91, B. S. Agr.—Edwin S. Van Kirk is on his farm at Newfield, N. Y.

'91, B. S. Agr.—Jared Van Wageningen, Jr., was the orator of the class of 1891. On looking up the com-

mencement program for that year we see that Mr. Van Wageningen delivered a commencement oration entitled "Our Present Agricultural Depression." As history goes the agricultural students were so appreciative of the efforts that an enormous hamper of roses had been provided outside the Armory, and on the completion of the oration it was passed in through the window and presented to the young speaker on the stage. Mr. Van Wageningen's home is at Lawyersville, N. Y., on Hillside Farm, which has received the care of father and son, and has been in the family continuously for over 100 years. In addition to his farm duties Mr. Van Wageningen is an active institute lecturer throughout the state, and a frequent writer for agricultural journals.

The following special students left with the class of 1891 and we know nothing more about them: Albert H. Berry, David K. Dickinson, James C. Duffey, George L. Gridley, Homer Heath, Helcias de Oliveira.

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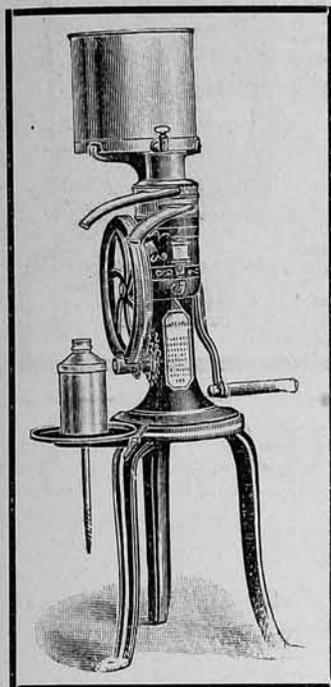
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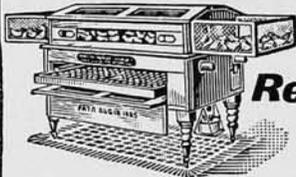
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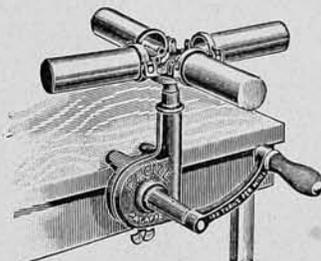
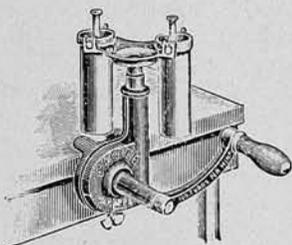
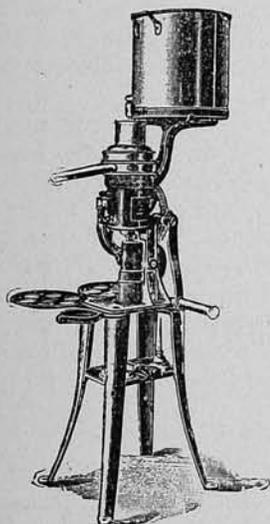


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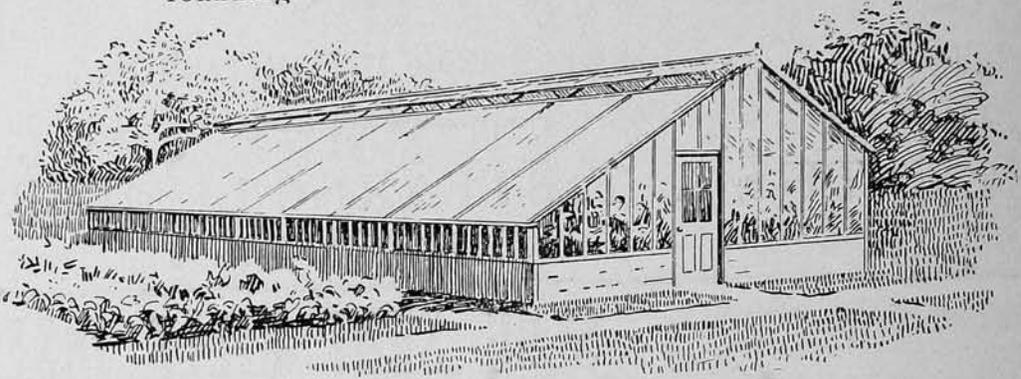
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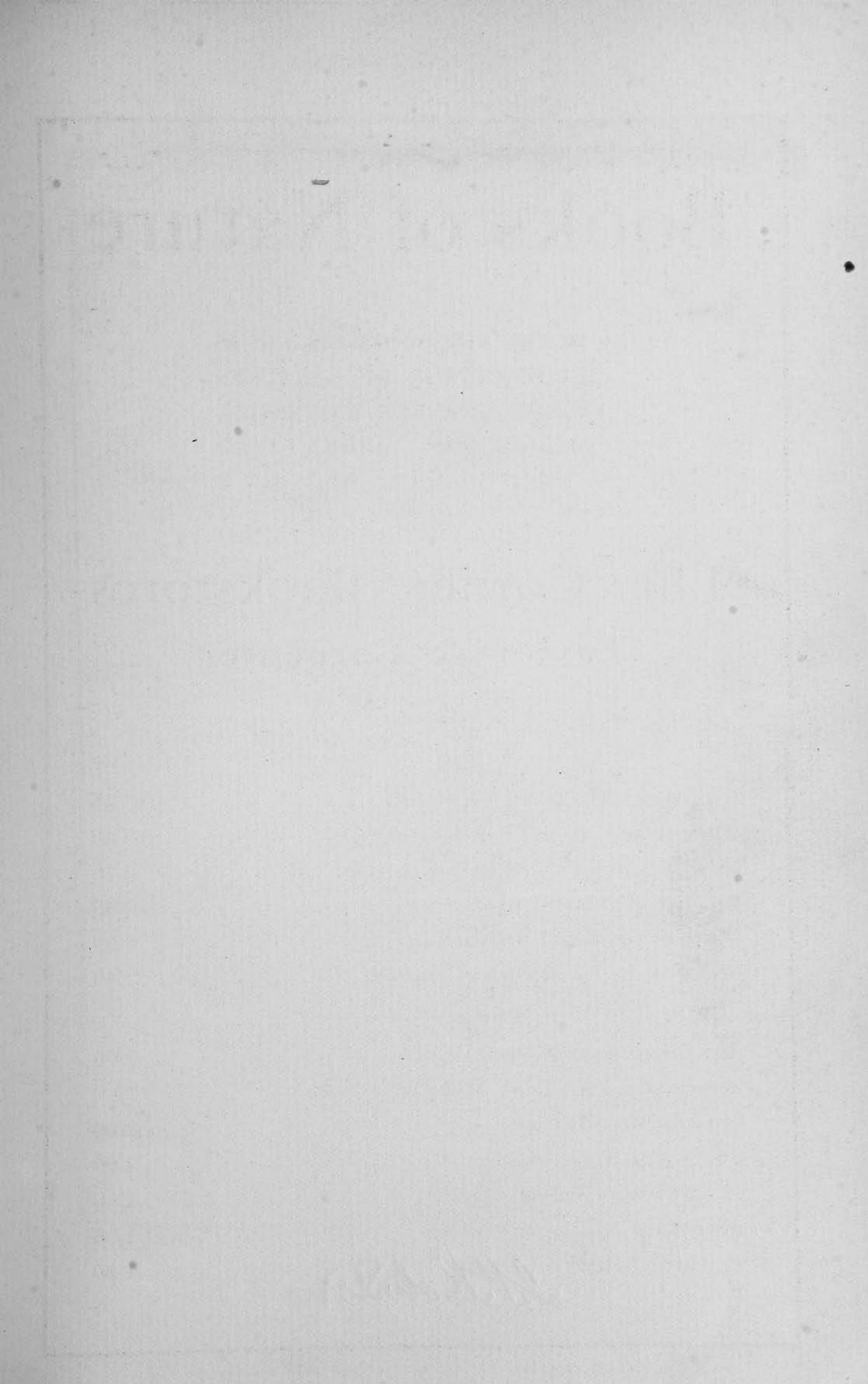
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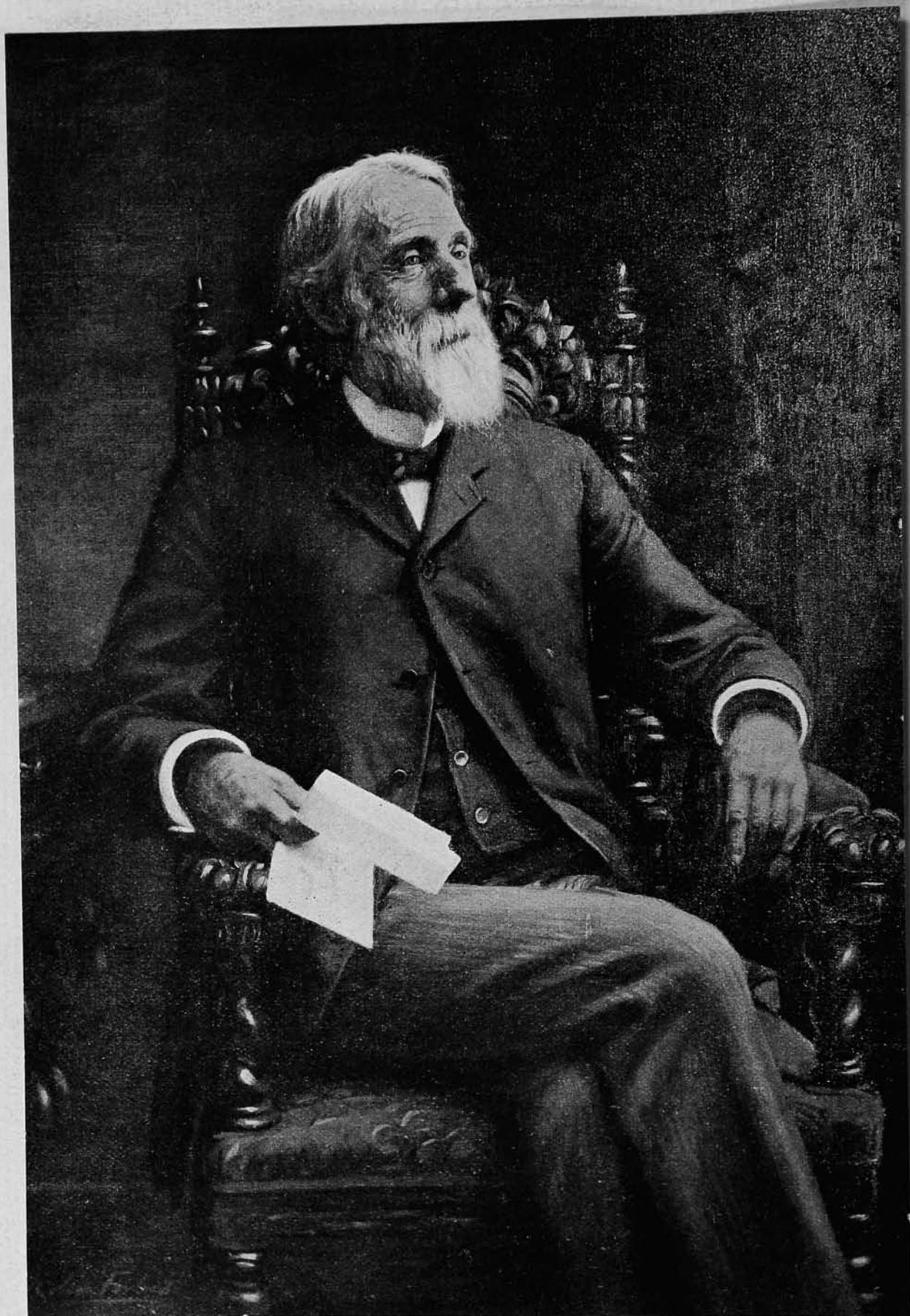
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THE SOCIAL SIDE OF THE FARM QUESTION

By Kenyon L. Butterfield

President of the Rhode Island College of Agriculture and Mechanic Arts

THERE is a proverb in grange circles which expresses also the fundamental aim of all agricultural education, — "The farmer is of more consequence than the farm and should be first improved." The first term in all agricultural prosperity is the man behind the plow. Improved agriculture is a matter of fertile brain rather than of fertile field. Mind culture must precede soil culture.

But if the improved man is the first term in improved agriculture, if he is the effective cause of rural progress, he is also the last term and the choice product of genuine agricultural advancement. We may paraphrase the sordid, "raise more corn to feed more hogs to buy more land, to raise more corn, etc." into the divine, "train better farmers to make better farming to grow better farmers, etc." We want trained men that we may have an advancing agricultural art, that we may make every agricultural acre render its maximum. The improved acre, however, must yield not only corn but civilization, not only potatoes but culture, not only wheat but effective manhood.

But we may carry the point a step farther. The individual farmer is the starting point and the end of agriculture, it is true. But the lone farmer is an anomaly either as a cause or as a product, as the lone man is everywhere. As an effective cause we must have co-operating individuals, and as an end we desire an improved community and a higher-grade *class* of farmers.

The farm question then is a social question. Valuable as are the contributions of science to the problems of soil and plant and animal, the ultimate contribution comes from the development

of improved men. So the real end is not merely to utilize each acre to its utmost, nor to provide cheap food for the people who do not farm, nor yet to render agriculture industrially strong. The gravest and most far-reaching consideration is the social and patriotic one of endeavoring to develop and maintain an agricultural class which represents the very best type of American manhood and womanhood, to make the farm home the ideal home, to bring agriculture to such a state that the business will always attract the keen and the strong who at the same time care more for home and children and state and freedom than for millions. In other words, the maintenance of the typical American farmer—the man who is essentially middle class, who is intelligent, who keeps a good standard of living, educates his children, serves his country, owns his medium-sized farm, and who at death leaves a modest estate—the maintenance of the typical American farmer is the real agricultural problem.

If this analysis is a correct one, it will vitally affect our plans for agricultural training. The student will be taught not only soil physics, but social psychology. He will learn not only the action of bacteria in milk fermentation, but the underlying causes of the social ferment among the farmers of the last thirty years. He will concern himself with the value of farmers' organizations as well as with the co-operating influences of highbred corn and highbred steers. The function and organization of the rural school will be as serious a problem to him as the building and management of the co-operative creamery. The country church and its career will interest him fully as much as does the latest successful device for tying milch cows in the stable.

He will want to get at the kernel of the political questions that confront agriculture just as fully and thoroughly as he wishes to master the formulæ for commercial fertilizers. No man will have acquired an adequate agricultural education who has not been trained in rural social science, and who does not recognize the bearing of this wide field of thought upon the business of farming as well as upon American destiny.

Research, too, will be touched with the social idea. The men who study conditions existing in rural communities which have to do with the real life of the people—the effects of their environment, the tendencies of their habits and customs—will need as thorough preparation for their work, and the results of their efforts will be as useful, as that of the men who labor in field and laboratory.

But the most profound consequence of recognizing the social side of the farm question will be the new atmosphere created at the agricultural colleges. These institutions are fast gaining leadership in all the technical questions of agriculture—leadership gladly granted by progressive farmers when-

ever the institution is managed with intelligence and in the spirit of genuine sympathy with farming. But these colleges must minister to the *whole farmer*. They must help the farmer solve all his problems, whether these problems are scientific, or economic, or social, or political. And let it be said in all earnestness that in our rapidly shifting industrial order, the farmer's interest in the political, social and economic problems of his calling is fully as great as it is in those purely scientific and technical. And rightly so. A prime steer is a triumph. But it will not of itself keep the farmer free. The 50-bushels-of-wheat acre is a grand business proposition provided the general industrial conditions favor the grower as well as the consumer. When our agricultural colleges enter into the fullest sympathy with all the rural problems, when the farm home and the rural school and the country church and the farmer's civic rights and duties and all the relations of his business to other industries—when these questions are "in the air" of our agricultural colleges, then and then alone will these colleges fulfill their true mission of being *all things to all farmers*.

NATURE-STUDY AND AGRICULTURE

By Anna Botsford Comstock

Lecturer in Nature-Study

THE Cornell University nature-study movement is primarily an agricultural movement. It has had for its object from the first the presentation to the child of the more interesting phases of life on the farm, and the giving him some inkling of the ways of the plants and animals that creep up unnoticed to his very doorstep, with the hope that the interest thus aroused would later deter his feet from following the broad path that leads from the farm to the city. Some there be who have criticized the Cornell method and have said, "Why not teach agriculture pure and simple from the first?" To this query one might retort with quite as much reason, "Why not teach the child grammar before it learns to speak so that its first words

may be lispéd according to the rules and science of the language?" Nature-study is the alphabet and the words of one syllable of agriculture, and that is why the child should begin with nature-study instead of agriculture.

Another argument has been presented, "Why not make your nature-study along the lines of agriculture solely; for instance, why should not a child begin nature-study with the cabbage rather than the hepatica." This argument carried out logically would provide recreation for the boy in hoeing corn rather than in playing ball. Many parents in the past have argued thus, and have in consequence driven thousands of splendid boys from the country to the city with a loathing in their souls for the drudgery which seemed to be all there was of farm life.

The reason the wild flowers have been selected to begin the nature-study of plants is because every child loves these woodland posies naturally, and his happiest hours are those spent gathering them. The very first principle of modern teaching demands that the child's intelligence shall be cultivated along the line of the child's interest. The child loves the hepatica, the jack-in-the-pulpit and the trillium, and is eager to know more about them; and since the fundamental truths of plant life are quite as true in the case of the wild wood flower as in that of the carrot or the cucumber, why not let the child grow in his knowledge of plant life along his natural path instead of forcing him to knowledge along a channel obstructed by his indifference or dislike. Never yet have we known of a case where a child having gained his knowledge of the way a plant lives through studying the plants he loves, has failed to be interested and surprised and delighted to find that the wonderful things he discovered about his wild flower, may be true of the meanest vegetable in the garden, or the purslane which fights with them for ground to stand upon.

For a like cogent reason gardening is begun with flowers instead of vegetables because the young child is more interested in flowers than in anything else that grows. But after the garden work is well begun and the principles of plant-growing are better understood, the interest widens to the vegetable garden naturally. Thus in every phase nature-study at its best, begins at the point where the pupil's interest touches the outside world, and from this point widens naturally until it includes his whole environment.

Both nature-study and agriculture are based upon the study of life and the physical conditions, like soil, water, air, etc., which encourage or limit life. If we see clearly the relation of nature-study to science we may perhaps better understand the relation of nature-study to agriculture, which is based upon the sciences. Nature-study leads to a knowledge of the sciences of botany, zoology and geology as illustrated in the door-yard, the corn field, or the woods back of the house. Some people have had an idea that to know

these sciences one must go to college, and do not understand that nature has furnished them with material and laboratories on every side and close at hand. So by beginning with the child in nature-study we make for him a laboratory in the wood, the garden or along the roadside or in the field, and his laboratory materials are the wild flowers, or the weeds of the garden, or the insects that visit the golden-rod, or the bird that sings in the maple tree, or the woodchuck that sits up and whistles in the pasture. The child begins to study living things anywhere and his progress is always along the various tracks laid down by the laws of life, along which his work as an agriculturist must always progress if he is to make it an intelligent and successful work. The child through nature-study learns the way the plant grows whether it be an oak, or a turnip, or a pigweed; he learns how the root of each is adapted to the needs of the plant; and how the leaves place themselves to get the sunshine, and why they need it; and how the flowers get their pollen carried by the bee or wind; and how the seeds are finally scattered and planted. Or he learns about the life of a bird whether it be a chicken, an owl, or a bobolink; he knows how each bird gets its food and what its food consists of; where it lives and where it nests, and its relations to other living things. Or he studies the bumble bee, and discovers its great mission of pollen carrying for many flowers, and in the end would no sooner strike it dead than he would voluntarily destroy his clover patch. While learning all these things we call it nature-study, and not science or agriculture. But the country child can never learn anything in nature-study that has not something to do with science, and that has not its own practical lesson for him when he shall become a farmer.

Some have said to us, "We, as farmers, care only to know what concerns our pocketbooks; we wish only to study those things which we must, as farmers, cultivate or destroy. We do no care for the butterfly, but we wish to know about the plum-weevil; we do not care for the trillium, but we do care for the onion; we do not care for the meadow lark, but we do care

for the gosling." To say nothing of the sordidness of this view it is a physical or mental impossibility for any one to discriminate between two things when he sees only one. In order to understand the important and economic relations to the world of one plant or animal it is absolutely necessary to have a wide knowledge of other plants and animals. One might as well say to begin with, "I will look at the approaching cyclone, but never see the sky; I will look at the clover but never see the dandelion; I will look for the sheriff when he comes over the hill, but will not see any other team on the road."

So in nature-study we strive to keep the child's eyes open to all things so that when he becomes a farmer he may be able to see all things and discriminate wisely. To one thus trained the farm is the most interesting place in the world, and the farmer has the best opportunity for continuing his education in connection with his work of any man in any vocation. All of the scientists of the world have spent their lives solving problems which nature presents; and as agriculture is based upon the sciences, and as nature is the impartial teacher, so she ever presents problems to the farmer, and well is it for him when he is able to solve them successfully. Such an one feels that on the farm is a life work that demands all his intelligence, and the widest knowledge, and in exercising these he finds supreme satisfaction.

Nature-study is the effort to make the individual use his senses instead of losing them; to learn to keep the eyes open to all things whether it be the thunder-head piled up in the western sky or the flash of oriole gold from the elm; to keep the ears open to the voices that call, whether it be the song of the cricket in the path, or the song of the hen on the sunny side of the barn. Eyes open, ears open and heart open are all that nature, the teacher, requires of her pupils, and in return she will reveal to them the marvels of life, the riches of the world, and the beauty of the universe.

Nor is the appreciation of beauty in nature's realms the least valuable factor in nature-study. While dollars and

cents are necessary to success and must be looked after, yet the man or woman who looks for them alone is narrow and sordid, and lives in a prison of thick walls of selfishness, and looks out on the world through a window darkened by the bars of avarice. The man that goes into the field in the morning with the consciousness of the sunshine, and the song of birds, and the growing green of the forests and meadows; he who understands and is a good comrade of the cunning old crow grubbing in the corn field, or the meadow lark singing in the meadow; the man who is conscious of all the life and beauty about him will do his work better, and know better how to protect his crops, and he will have a richer harvest than the one who sees the dollar mark on every leaf, and hears the chink of coin in every sound.

Some years ago we received here a letter from a Canadian farmer boy, and in this letter he says, "I have read your leaflet entitled, 'The Soil, What It Is,' and as I trudged up and down the furrows every stone, every lump of earth, every sandy knoll, every sod hollow had for me a new interest. The day passed, the work was done, and I at least had had a rich experience." Who would doubt that such a man having such thoughts would plow a straighter furrow than he who sees only the earth he turns, and the horses which he perchance swears at as he goes on his dull routine blinder than the mole whose wonderful galleried house his plow disturbs.

The ideal farmer is not the man who by chance and hazard succeeds; but he is the man who loves his farm and all that surrounds it because he is awake to the beauty as well as to the wonders which are there; he is the man who understands as far as may be the great forces of Nature which are at work around him, and, therefore, he is able to make them work for him. For what is agriculture save a diversion of natural forces for the benefit of man? The farmer who knows these forces only when restricted to his paltry crops and has no idea of their larger application, is no more efficient as a farmer than would be an engineer who knew nothing of his engine except how to start and stop it. In order to truly ap-

preciate his farm the farmer must needs begin as a child with nature-study; in order to be successful and make the farm pay he must needs continue in nature-study; and to make his declining years happy and content

and full of wide sympathies and profitable thought he must needs conclude with nature-study; for nature-study is the alphabet of agriculture, and no word in that great vocation may be spelled without it.

THE RELATION OF HUMAN AND BOVINE TUBERCULOSIS

By *Veranus A. Moore*

Professor of Comparative Pathology and Bacteriology, New York State Veterinary College

THE relation existing between tuberculosis in man and in animals has been a matter of much concern during the last few years. The extreme statements, that have appeared during this time in many of our agricultural papers, have given just cause for skepticism on the part of the cattle owners concerning this very important point.

The observations and experimental work following the discovery of the tubercle bacterium seemed to establish the identity of tuberculosis of various species of animals with each other and with that of the human subject. Koch in his first publication stated that, "bovine tuberculosis is identical with human tuberculosis, and therefore a disease transmissible to man." Other investigators at that time held the same opinion, and the belief was entertained almost unanimously up to 1889, that tuberculosis in the human and bovine species was identical in its etiology; in fact, it was thought that this disease in all species of animals was due to this same cause.

The first doubt as to the identity of the tubercle bacterium in different species of animals was suggested in 1889 and 1890 by Rivolta and Maffucci who showed that there were marked differences between the human and avian tubercle organisms.

In 1898, Dr. Theobald Smith published the results of an extended investigation in which he found certain marked differences between the tubercle bacilli coming from human and bovine sources. In brief these differences were:

1. The bovine organism tends to remain shorter and thicker than the human variety.

2. The bovine bacilli are influenced less by certain modifications of the culture medium.

3. The bovine variety is more virulent for animals such as rabbits and cattle than the human varieties.

Because of these and possibly other variations, Smith states that there are *races* or *varieties* of tubercle bacilli. His results were soon confirmed by Professor Adami, of McGill University, Dr. Ravenel, of the University of Pennsylvania, and others in this country, and in Europe.

The next variation noted in the tubercle organism was that by Dubard who published papers on tuberculosis in cold blooded animals in 1897 and 1898 in which he showed that the bacterium of tuberculosis in fish had varied in an extraordinary degree from the human type. It is important to note that, notwithstanding the divergent biological characters of the tubercle bacteria from different sources—man, cattle, birds and fish—the results of investigations have led to the conclusion that they are essentially the same and that the avian variety may be changed to the mammalian types by suitable modification of the environment. These technical findings were becoming quite generally accepted when, in 1901, Koch read his memorable paper before the British Congress of Tuberculosis. The most telling sentence in that communication, at least the one that attracted the most attention was, "I feel justified in maintaining that human tuberculosis differs from bovine and cannot be transmitted to cattle." His paper, however, does not give evidence of the discovery of any essential difference between the two varieties other than

those that had already been pointed out by Dr. Smith in 1898.

It would be interesting to follow the investigations in detail since the meeting of the British Congress. Koch's paper gave a tremendous stimulus to the investigation of this disease, and a large number of bacteriologists and pathologists have instituted many investigations approaching the problem from almost every side. The results of their many inquiries tend to a more positive conclusion than was previously entertained that tuberculosis in animals and in man is caused by the same *species* of bacteria, although they differ in certain features. Since the development of more accurate methods for studying tubercle bacteria, the results obtained in their investigations are far more convincing than those of a former date. For this reason the recent findings by Ravenel, and de Schweinitz and Mohler in this country, and by Thomassen, de Jong, Orth, Jensen, Nocard, Arloing, Behring, Hamilton and many others abroad, of tubercle bacteria in the human subject that are capable of producing tuberculosis in cattle is very significant in pointing to the possible transmissibility of the disease from cattle to man and *vice versa*. Some of these workers have produced the disease in sheep, goats and swine with the bacteria obtained from human material. Again, the results of recent investigations have brought to light the interesting fact that there are great differences in the virulence of different cultures of tubercle bacilli isolated from the human subject. Further, Ravenel has shown that the biological characters of the *bovine* variety can be produced in the *human* variety by passing them through certain species of animals, and de Schweinitz, according to Salmon, has isolated from the human subject tubercle bacilli that grow like the *bovine* organism under artificial conditions.

If one subjects these results to a close analysis in seeking an explanation for the somewhat marked varietal differences in tubercle bacilli, the fact becomes evident that these organisms have been living under very different life conditions in the bodies of these different species of animals. In other

words the same general environmental forces that cause variations in other species of bacteria as well as in higher plant life are exercising their influence on the tubercle bacteria. In support of this, investigations have brought to light the significant fact that as a rule tuberculosis spreads from individual to individual of the same species, and that it is comparatively rare for it to cross from one species to another, although we believe that this sometimes happens.

It does not seem unnatural that the continual growth of the tubercle bacilli in the restricted environment of the human body with a temperature of 98-99 degrees F. should exercise a corresponding influence upon these bacilli, and that a like existence in cattle with a temperature of 101-103 degrees F. or in chickens with a temperature of 103-108 degrees F. together with other differences in these animals should produce equally modifying effects upon tubercle bacilli invading and living within them.

Anthrax bacteria grown at the body temperature of man will produce spores and retain their virulence, but when cultivated at a temperature a few degrees higher they soon lose the power to produce spores, their virulence disappears, and they grow in long filaments instead of short rods. Are the differences in the life conditions here greater than they are with the tubercle bacteria in the bodies of the different species of animals? As varieties are recognized in all other known species of bacteria, their existence with the tubercle bacterium is not in any sense an unusual or unexpected occurrence. Whether we wish to entertain this or any of the other explanations that have been suggested or not, we must admit that bacteriologists have been able, by means of the greater accuracy of well controlled methods, to demonstrate that there are differences between the various cultures of tubercle bacteria and that these differences are not greater than those of varieties. In dealing with the etiology of tuberculosis we are grappling with an element in the biological world, which is influenced and modified by its environment in accord with the existing laws of nature.

THE CORNELL UNIVERSITY POULTRY SHOW

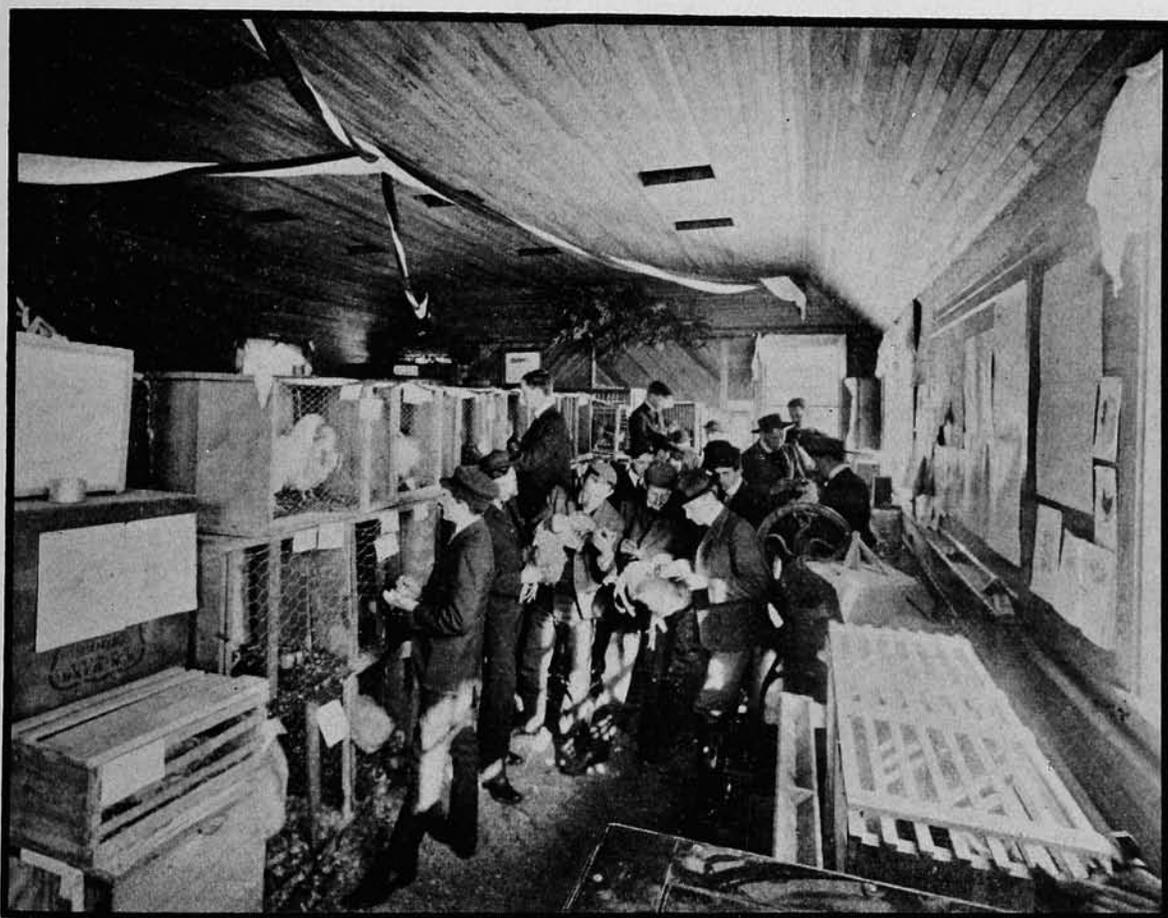
By C. A. Rogers, '05

President of the Cornell University Poultry Association

THIS year, several new departures in the College of Agriculture of Cornell University have been made. Among them is the establishment of the chair of poultry husbandry, for which position Mr. J. E. Rice of Yorktown, N. Y., was selected. Professor Rice was the first man in the country to give a definite course of lectures on poultry husbandry. These were given to a class

hibition expressly for the purpose of stimulating interest, increasing knowledge, and giving practice to the members in the preparation of poultry for exhibition, in judging and scoring, and in the organization and management of poultry shows.

The first annual exhibition was held in the judging pavilion on the University farm, March 1, 2, and 3, 1904. With the assistance of the ladies in the



SCORING FOWLS

of 50 students at Cornell University in the spring of 1892. The professorship which he now holds is one of two such positions in the United States.

Early in the season Professor Rice suggested to the poultry students the benefits that would accrue from a students' annual poultry exhibition. Plans were made and entered into with enthusiasm, to organize a Cornell University Poultry Association.

The object of this organization is to hold an annual poultry ex-

course of poultry husbandry, the decorating committee transformed the pavilion into an attractive exhibition hall.

This exhibition has accomplished all that was expected and, in some respect, even more than the most enthusiastic had hoped for. It has served to familiarize the students with the various breeds and varieties of poultry, and to give inside experience in the running of a poultry show. It has furthermore increased the inter-

est and enthusiasm of the students, and has attracted the attention of students and others to the poultry work which is being done at Cornell.

Each student drew by lot the breed from which he should select and exhibit two individuals. He had charge of the feeding and preparation of these for the show. Besides the University fowls, many others were on exhibition from poultrymen, including some which were shown by Mr. Wyckoff at Madison Square Garden. In all 37 different varieties of chickens, ducks and turkeys, including 110 individuals, were on exhibition.

Each student scored eight different varieties. Those who proved themselves proficient in judging are to receive a certificate of qualification to judge the breeds named in the certificate. Mr. T. E. Orr scored the show as a check to the students' scoring, and awarded first and second prizes.

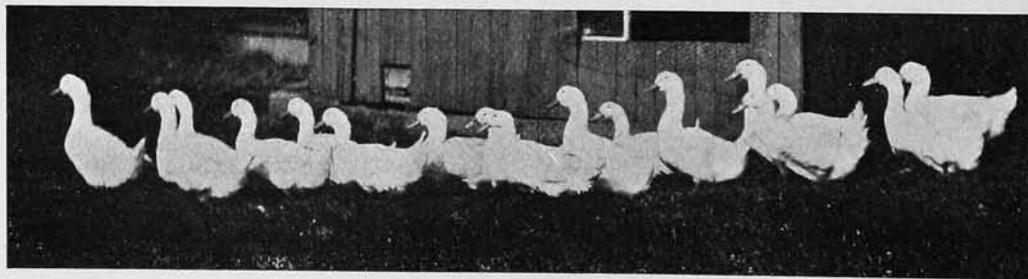
As a supplement to his work in judging and scoring, Mr. Orr gave an impressive and convincing demonstration-lecture on eight varieties of fowls. Mr. Orr is the secretary of the American Poultry Association, and is well known throughout the country as a man high in his profession. He was sent here by the Bureau of Farmers' Institutes in return for which favor Professor Rice has delivered several addresses at farmers' institutes. It is hoped that each succeeding exhibition will secure a man as well versed in his profession.

In addition to the exhibition of poultry, there were many other interesting displays. Thirty of the best poultry papers from all parts of the United States, and numerous books were arranged in an attractive booth. A large collection of eggs, which it is believed is the only one of its kind in existence, was displayed. In one corner mounted specimens of various poultry

enemies, such as the fox, hawk, crow, skunk, weasel, raccoon, rat, etc., were arranged in a show case. Pictures of fowls, of poultry houses, and students' drawings decorated the walls. A symposium of charts, models, trap nests, ammonia testers, various kinds of scales, thermometers, sling psychrometers, leg-bands, etc., were given proper places, making a panoramic display of the poultry instruction and experiments carried on at the College of Agriculture.

The attractiveness of the show was further increased by the extensive displays sent in by various companies. Chloro-naptholeum supplies for disinfecting the show were furnished by the West Disinfecting Company of Rochester. The Cornell Incubator Company of Ithaca, the Harding Company of Binghamton and the Vicks Company of Rochester placed their poultry feeds and supplies on inspection. The Cornell Incubator Company made a large exhibit of their incubators, brooders, bone grinders, clover cutters, patent feed pans, coops, etc. The H. E. Jennie star egg carrier, the Dixon shipping boxes, and the Humphrey bone cutter were also shown. The following incubators were running: Charles A. Cypher's New Model and Cypher's; Star; the Excelsior; Prairie State; Skinner; Pineland and Von Culin.

Chickens were hatching during the last two days of the show, and the incubator house with its fluffy little chicks received many admiring visitors. The popularity of the exhibition was shown by the fact that over 500 visitors were registered during the last two and one-half days. The chief purpose of such an exhibit is, however, not so much in what the casual visitor gains as in the training given to the students who prepared and managed it.



REMINISCENCES

By Uncle John

MY FIRST knowledge of agricultural colleges began about 1858 when I was a lad of fifteen. At that time I was a reader of *The Cultivator*, published by Luther Tucker of Albany, a publication later merged into *The Country Gentleman*. These were the days when the agitation for colleges of agriculture began.

The common conception of what a college for farmers should be was a farm, with buildings and stock, model in all details. In other words, everything should be in a sand-papered and varnished condition, to be looked at, but like a fancy sofa pillow, too fine for any earthly use. Some few have that notion yet.

I never knew but one schoolmaster who went to the legislature. The gentleman was my teacher once upon a time. On his return from Albany, I asked him what were the prospects of the state of New York ever endowing a college of agriculture. In reply, he said that the cows would come home for many years before such a thing would happen.

From that time my desire for agricultural information remained in a comatose condition until about the close of the Civil War. Then I began to look around for books upon the subject. There were a number on the market. I bought a few of them. All were cribbed from English publications. There was not one of them that did not begin the subject back in Greek and Roman history, with an occasional reference to Egypt and the Nile. Never did an author fail to mention what Pliny had said on the subject. Most of the writers were superannuated ministers or Latin and Greek grannies.

One I remember narrated how he relieved a mother of the care of her infant by taking the child to the field and when plowing, carrying the infant in a basket fastened to the plow beam. This was preceded by a chapter admonishing farmers of their duty to God. When I came to the incident

of the baby, the basket and the plow, I knew that the writer was a sanctimonious liar, and had no confidence in anything he had to say. If he had told me that water runs down hill I would not have believed him.

Was not that enough to lay the foundation for a prejudice against "book farming" that would take a half century to live down?

As to the agricultural papers of that time, the contributors were about equally divided between the braggarts who never failed to have phenomenal results and those who had axes to grind in exploiting certain seeds and stocks.

A new era of agricultural literature began with Peter Henderson and his "Gardening for Profit." He made no attempt at belles-lettres nor at a display of literary culture, but he did tell how to raise garden truck, and he told it well. About this same time, the *Rural New Yorker*, then published at Rochester, the *Country Gentleman* at Albany, and the *American Agriculturist* at New York, came into prominence as agricultural journals. I was then a reader of the *American Agriculturist*, and from month to month weighed in the balance the work of John Johnson of Geneva, Tim Bunker, Morton and Henderson. They talked farming and the money to be made by it and not Pliny and the history of agriculture.

I know full well that even at the present time there is much unreasonable prejudice against this so-called "book farming," but in the past, there was much reason for it. Until he has studied the farmer as well as the farm, no one is qualified to teach farming to farmers. Because a man is capable in research work, it does not necessarily follow that he is competent to teach husbandmen. In the raising of agricultural crops, the farmer may succeed and the instructor utterly fail. A college of agriculture should have two distinct divisions—one for the teaching of farmers and the other for the teaching and training of investigators.

EXHIBITS OF THE LAND-GRANT COLLEGES ST. LOUIS

By C. S. Wilson, '04

An interesting feature of the agricultural display at St. Louis this year will be the exhibit of the Association of American Agricultural Colleges and Experiment Stations. An appropriation of \$100,000.00 for defraying the expenses of the exhibit was made by the last Congress. The exhibit will represent the sixty-five land-grant colleges and universities which are receiving the benefits of the Acts of Congress of 1862, 1887 and 1890.

The purpose of the exhibit is "to project the composite work of the land-grant colleges in all of its variety as one of the important elements of educational activity in the United States." The exhibit is to consist of concrete illustrations of methods and results of education and research. It is the first attempt ever made to design an exhibit of these institutions from the point of view of the educator. The general scope of the exhibit may be indicated in a way by the assignment of floor space:

Mechanic Arts	4,000 feet
Bureau of Education	450 feet
Office of Experiment Stations..	450 feet
Agriculture—	
Biological Science.....	100
Plant Production	2500
Zootechny and Agrotechny	2500
Rural Engineering and	
Rural Economy.....	1000
	6,100
	11,000

Professor Hunt has charge of the section on animal husbandry, as well as being a member of the general committee in charge of the exhibit. He is preparing a display to show the methods of teaching. A space of 24 x 27 feet is being fitted up to represent a live-stock judging pavilion. In the center is the steer "Shamrock," which was fed at the Iowa State College, and which two years ago was the champion at the International Exhibit. Around this steer stand two wax figures in the act of judging. On

the walls and floor of the pavilion are shown the score cards (enlarged), scales, apparatus and various tools used for measuring. In order that the students may see the different kinds of score cards in use, about twenty will be put up around the room.

On one side of this exhibit will be a space given to animal nutrition under the supervision of Dr. H. P. Armsby of the Pennsylvania Station. Opposite will be the veterinary medicine exhibit, in charge of Dean D. S. White of the Veterinary College of Ohio State University.

Many departments of Cornell University, including Sibley and other colleges, have been asked to contribute to the exhibit. In the College of Agriculture, Professors Wing, Craig, Hunt, Slingerland, Rice and Fraser are preparing exhibits showing methods of instruction or research in their several departments.

WHAT SOME COUNTRIES SPEND FOR AGRICULTURE

Senator Proctor, reporting the agricultural appropriation bill from the committee, remarked that there were increases for several bureaus as well as for special work, over the appropriation made in the bill as it passed the House. He said that to equal the appropriations made for agriculture by France, Austria, Hungary, Russia or Japan, the area of land under agriculture in this country would call for an expenditure by the federal and state governments of \$90,000,000 a year, instead of \$10,000,000. The following figures show the amounts in cents expended in certain important foreign countries per acre of tillable land and per capita of agricultural population:

	Per acre.	Per capita.
France	9.8	52
Austria	13.3	69
Hungary	12.4	90
Russia (about)....	4.0	..
United States ...	1.3	35

The following table shows the area in square miles of some of the more

important agricultural countries, the number of experiment stations, and the number of square miles per station, which is called the ratio:

Country.	Area.	Stations.	Ratio.
Russia	8,660,395	102	84,906
Germany	208,830	80	2,610
France	207,054	71	2,916
Austria-Hungary	241,333	61	3,956
United States ..	3,692,125	60	61,535
Sweden	172,876	26	6,645
Italy	110,550	22	5,025
Belgium	11,373	15	758
Japan	147,655	15	9,844
Norway	124,130	12	10,344

In no section of the United States are there as many stations in proportion to area as in France or Germany. In our smallest states along the Atlantic coast we have one station for 24,000 square miles; France and Germany have eight. The south central states with their 10 stations are 40 per cent larger than all France and Germany, with 151 stations, and Texas alone, with one federal station, is 27 per cent larger than either of these countries. The ratio of stations to area in France and Germany is 96 to 1 compared with Texas, 28 to 1 compared with Minnesota and the Dakotas, and 39 to 1 compared with the Pacific states.

But there is a reason for a more liberal expenditure for agriculture in this country than in Europe. In Europe it is a condition of practically finished growth. Many years of experience have settled the crops and methods of agriculture suited to their conditions, while we are constantly introducing new crops and bringing vast new areas under profitable cultivation.

—*The Country Gentleman.*

A SIMPLE RULE FOR STANDARDIZING MILK OR CREAM

The following ingenious and rapid, but accurate method of standardizing milk or cream was devised by Professor Pearson of the dairy department. It is a marked contrast with the long involved rules usually given. It has been published in the *New York Produce Review and American Creamery*.

Having given two milks or creams of different richness and being required to mix them to form a third of definite percentage, draw a square, and at the two left hand corners write the percentages of fat in the two fluids which are to be mixed. In the center, place the percentage required. Put numbers at the two remaining corners which will be the differences between the two other numbers with which they will stand in line. The last two numbers, or those standing at the right hand corners, will represent the proportions that should be taken of the fluids whose percentages stand in the same horizontal line with them.

For example, suppose it is required to make a 26 per cent cream by mixing 28 per cent cream and 3 per cent milk. By placing these given numbers as stated by the rule, and finishing the square, it is seen at once that 26 per cent cream will be made if 23 parts of 28 per cent cream are mixed with two parts of 3 per cent milk. This would give a total of 25 parts of 26 per cent cream. If 100 pounds are wanted, four times as much of each ingredient should be taken, etc.



“If I could put my words in song,
 And tell what’s there enjoyed,
 All men would to my garden throng,
 And leave the cities void.”

—*Emerson.*

The Cornell Countryman

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APRIL, 1904

Bovine and Human Tuberculosis

When the question of the intertransmissibility of human and bovine tuberculosis first came up, dairymen accepted the conclusion of Koch that the bovine tuberculosis was identical with the human and was transmissible to man. But preventative measures were not well started before we were informed that cattle could not be infected from man, and that, therefore, there was probably no danger of man being infected from cattle. The dairyman was, of course, more than willing to accept this view, and cannot now be blamed if he is slow when asked to again change his mind. One point should be remembered. Koch's statement that human tuberculosis cannot be transmitted to cattle—the basis for the doubts of the possibility of man's infection from cattle—has been repeatedly disproved. The disease has been produced in cattle, sheep, goats and swine with bacteria obtained from man. Unfortunate as the controversy has been in confusing the public, it has resulted in such a multitude of careful experiments that the layman may conclude that bovine tuberculosis may be transmitted to man, and he is in little danger of ever being called upon to again change his mind on the subject.

We are particularly fortunate in being able to present an article on this

important subject by Dr. Moore, who is one of the leading experimenters and authorities on the question. No one but a specialist can follow out all of the investigations, but Dr. Moore gives us a brief history and outline of the work such as every one should know.

Government Inspection of Fruit

According to press reports, a bill has been introduced in the New York Legislature to regulate the sale of fruit in closed boxes or barrels. It requires that every closed package be marked with: (1) the address of the grower, (2) the name of the variety, (3) the place where grown, and (4) a designation of the quality as first, second or third. If marked first quality, the fruit must be "well grown specimens of one variety, sound, of nearly uniform size, of good color for the variety, of normal shape, and not less than 90 per cent free from scab, worm holes, bruises and other defects, and properly packed."

If such a law is passed and is strictly enforced, it cannot fail to benefit the apple industry of New York. An act to regulate the amount of water in the evaporated apples would also benefit that industry. Perhaps the National Government should be the power to enforce such laws, but whatever the means, if properly carried out, the results will be good.

The Canadian "Fruit Marks Act" seems to have been well enforced and to have benefited the apple industry of that country. Since its passage, the relative prices of American and Canadian apples in the markets of Europe have been more favorable for Canada than formerly. The American product is as good as the man who packed it. The Canadian fruit is what it is marked on the outside. The consu-

mer is willing to pay a little more for a sure thing.

Buildings for the Department of Agriculture

One of the most noticeable things to the visitor at the United States Department of Agriculture is the crowded condition. Agriculture, the greatest of all industries, is the last to be adequately provided for. The main building is a small brick structure erected many years ago. Over half of the work is now done in made-over dwelling houses and old stores. The work on soils, animal industry, vegetable pathology and other subjects is scattered all over Washington in rented buildings. Much valuable material is stored in wooden buildings where it is constantly in danger of loss by fire.

The last Congress made an appropriation of \$1,500,000 for a building to house the departments that are now paying rent. Plans have been made which provide for the erection of ten buildings to be connected with an administration building by pavilions in such a manner as to make one harmonious unit. The advantage of these plans is that the room may be increased indefinitely, and that the result will always give the effect of one structure. The present appropriation will be used for the erection of three of the laboratory buildings. The administration building cannot be erected till further appropriations are made.

Atmospheric Nitrogen as a Fertilizer

Recent numbers of several scientific journals have contained discussions of a new method of securing nitrogen from the atmosphere for soil fertilization.

As early as 1785 it was demon-

strated by Priestly and Cavendish that the free nitrogen of the air could be made to combine under the influence of the electric spark. Not until recently, however, were definite attempts made to bring this method into commercial importance. From an agricultural standpoint it is of great value. Nitrogen is the most expensive of the fertilizing constituents and some scientific men now believe that the exhaustion of our known nitrate supplies, including those of South America, is not farther distant than a few generations.

The first method of combination which was tried proved too expensive for practical purposes. The oxygen was separated from the nitrogen by passing a current of air over red-hot copper with which the oxygen formed copper oxide. The nitrogen was then fixed by combination with calcium carbide, to form nitrate of lime. Calcium carbide, however, was too expensive, and scientists sought a cheaper material which would answer the same purpose. Dr. Erlwein found its substitute. By his method the nitrogen was brought into combination with a mixture of powdered charcoal and lime in an electric furnace. The product is known as calcium cyanamide and contains from 10 to 22 per cent of nitrogen. It can be used directly as a fertilizer, with no injurious effect to the plants, and has proved as efficient as ammonium salts, and only slightly inferior to nitrate of soda.

A company has been organized in Berlin for the manufacture of nitrogenous compounds by this process. Whether this can be done on a large scale at a cost that will make it available for the farmer remains to be demonstrated.

Corn Growing in Argentina

The Department of Agriculture has recently issued "Report No. 75" on "Indian Corn in Argentina." We are always interested in what is going on in Argentina for it is in so many respects the South American counterpart of the United States. We are also interested in it because it is destined to be our competitor in furnishing food for the world. In the northeast part of the country wheat growing is now giving place to corn, alfalfa and cattle.

The colonists usually bring no capital except their strong bodies. They are ignorant and are slow to adopt new ways. The owner of the land furnishes everything—machinery, seed and food, and receives two-thirds of the crop. After a few years the renter advances to the second stage where he furnishes everything and delivers 16-22 per cent of the crop to the owner. The third step is the payment of a cash rent of \$2 to \$3 per acre. Over half the farms are rented for cash, one-seventh for a share of the crop and the remainder are farmed by owners. Land was given to government favorites in large tracts, and until recently it has been difficult to buy small farms. This is gradually changing, although a vast proportion of the country is still owned in large blocks by men who do nothing to develop it.

The methods of cultivation are improving every year, as the leaven of modern ideas penetrates to the slow-thinking colonist. He would progress much faster in the United States, because he would have the example of better farmers all around him. In northern Argentina they have a range of about five months (August to January) in which to plant and still be reasonably sure of a crop. Aside

from lack of tillage, the principle mistake of the grower is his unwillingness to give the plants room enough. In some districts corn is still sown broadcast and nothing more is done with it until it is gathered in the fall, but most of it is planted with a machine attached to the plow—simply drilled in. The rows are about twenty inches apart, but the better farmers are learning to give more room. Perhaps 100 American planters have been imported, but no check rows were seen. Farmers speak of the North American checkerboard plan as a curious thing.

The yields are surprisingly large for such slovenly agriculture. Twenty-five bushels per acre is considered fair, except in the best regions, where yields of 70, 90 and even 110 bushels are reported.

"The results they achieve are due to the marvelous fertility of the soil and the perfect climatic conditions, which, in spite of bad methods, neglect and general ignorance, give bountiful harvests to men who would utterly fail in the corn belt of the United States if they farmed as they do in Argentina; and these men cannot long continue in this manner where they are." As yet they grow only about half as many acres as does the state of Iowa, but they export over 55 per cent of the crop, while Iowa exports only 11 per cent. Lack of facilities for shipping and lack of a stable market have kept the production down. "The most far-seeing Argentines realize that they must adopt the North American policy of sending corn to market on four legs, in the condensed form of beef and pork. As soon as they fully realize, as some of them now do, that corn is the other thing they need to supplement alfalfa in the production of beef, we shall see them going in for corn, and raising it themselves on their large stock ranches, to finish their cattle."

GENERAL AGRICULTURAL NEWS

The Agricultural College of the University of Wyoming has started a monthly publication called the *Ranchman's Reminder*. It is devoted to the theory and practice of arid agriculture. There is no other publication in that state devoted exclusively to agriculture. As the name indicates, it is undertaken for the benefit of the ranchman, and contains many valuable suggestions on the application of scientific principles to arid agriculture. It also has a strong educational side and will help to keep the Wyoming farmer abreast of the times,—“the farmer can never irrigate with the water that has passed.” The January number contains a plea for the establishment of farmers' institutes. “Wyoming is the only state in the Union in which series of farmers' institutes are not regularly held each year.”

* * *

The Bureau of Soils will map at least two areas in New York next summer. J. E. Lapham and H. H. Bennett will map that part of Cayuga county south of 43° north latitude. The northeast corner of this area will touch the Syracuse-Baldwinsville area and the northwest corner will touch the Lyons area, both of which are already mapped. Professor Jay A. Bonsteel will have general supervision of all the work in New York, and will have immediate charge of the “Dryden Sheet,” an area lying south and east of Ithaca. These areas, together with what has already been done will make a total of about 3,100 square miles mapped in New York.

* * *

The department of economics and sociology recently established by the Carnegie Institution, in charge of Carroll D. Wright, Commissioner of Labor, has undertaken the preparation of an economic history of the United States, embracing eleven subjects. The second of these subjects, relating to agriculture and forestry, including public land and irrigation interests, has been assigned to President K. L.

Butterfield, of the Rhode Island College. This part of the work, it is understood, will be carried on with the collaboration of experts in various branches of agriculture.—*Experiment Station Record*.

* * *

The University of Missouri has decided to accept agricultural instruction in the high schools as a basis for entrance to the University. The University hopes to have agriculture generally introduced into the high schools of the state.

* * *

The Department of Agriculture has arranged to conduct 30 demonstration farms in the Southern states. They will contain 40 to 50 acres each, and are located as follows: Texas, 14; Louisiana, 5; Mississippi, 3; Alabama, 3; Georgia, 2; South Carolina, 2; Florida, 1. These farms are located on private land, but will be under the direction of officers of the Bureau of Plant Industry, who will visit them frequently during the season. General farm crops will be grown for the purpose of demonstrating the practicability and methods of diversified agriculture.

* * *

The first number of the *Missouri Agricultural College Farmer* appeared March 1. It is published by students of the College, and starts out with a very creditable number. “The paper will not be, like many college papers, primarily for the graduates and students of the various agricultural colleges but, first and last, will be for the farmer.”

* * *

Professor F. H. King of the division of soil management in the Bureau of Soils at Washington, has resigned his position. Mr. King formerly held the position of professor of agricultural physics in the University of Wisconsin. We also know him through his books on agriculture, particularly “The Soil,” one of “The Rural Science Series.”

* * *

The University of Wisconsin has established a department of farm engineering with G. N. Knapp in charge.

CORNELL NEWS

CAMPUS NOTES

The following prizes were awarded to students on fowls fed and prepared by them for the poultry show: Miss H. A. Ellsworth, first prize, White Pekin ducks; Miss Rosa Ostertog, second, White Pekin ducks; John M. Lewis, first, White Leghorns; Harry Edgerton, first and second, White Leghorns; E. R. Boyce, second, White Leghorns; Paris Miner, first, Brown Leghorn; C. A. Rogers, first and second, Brown Leghorns; J. M. Robitzer, first and second, Buff Cochins; L. B. Seaton second, Buff Cochin; Henry Truckell, three seconds, Rhode Island Red, first and second, Buff Cochin bantam, first, Belgian hares; F. G. Thayer, first, White Plymouth Rock; L. B. Parker, first, White Plymouth Rock; C. H. Chapman, two seconds, White Plymouth Rock; Ralph Bell, second, White Rock; William Hoagland, two seconds, Barred Plymouth Rocks; H. E. Kinne, two seconds, Golden Wyandottes; H. Jennings, first, Golden Wyandottes; R. L. Cushman, first and second, White Wyandottes; Adam S. Hewetson, two seconds, White Wyandottes; H. F. Prince, first and second, Black Minorcas; R. R. Gould, second; C. S. Opperman, second.

* * *

The list of co-operative demonstrations for the year 1904 has recently been issued by the College of Agriculture. The 40 experiments provided for are divided into 7 categories: agronomy, plant selection and breeding, horticulture, entomology, animal industry, poultry husbandry and dairy industry.

"There are three purposes in this extension experiment work: (1) To demonstrate or teach,—to instruct the co-operator in methods, to set him at the working out of his own problems, to bring him into touch with the latest discoveries and points of view. (2) To demonstrate in various parts of the state the value or inefficiency of various

new theories and discoveries,—to determine how far these newer ideas are applicable to local conditions. (3) To discover new truth, which may be worthy of record in bulletins: this is usually the least of the results that follow from such experiments because the experiments are not under perfect control nor continuously under the eye of a trained observer."

Those who desire to take up such work should apply immediately, as no more experiments will be attempted than can be handled satisfactorily. They are open to anyone. Those who are particularly interested in this kind of work should join the Agricultural Experimenters' League of New York, and gain the added inspiration that comes from being a member of such a potent organization.

* * *

Mr. Flanders, assistant commissioner of agriculture in New York, gave an address on "Agricultural Law" before the Agricultural College, March 11. He spoke of the controversy over the oleomargarine law, which resulted in the passage of a law by Congress which made its sale subject to state laws, even if in the original package, and imposed a tax of ten cents per pound, if colored to imitate butter. Mr. Flanders also discussed the milk laws. The state holds the seller of adulterated milk responsible even though he did not adulterate it. The New York law requires that milk must not contain over 88 per cent of water, and must have at least 3 per cent of fat and 12 per cent of total solids. The first case tried under this law was in Albany. Thirty-nine milkmen combined and hired one of the best lawyers. The case was eventually carried to the Court of Appeals, which upheld the law. One case was cited in which a milkman was arrested with two or three cans of adulterated milk in his possession. He held that when mixed with the other cans which he was selling to the same firm it would test above the standard. The

court upheld him in his defense. The law also stipulates that no milkman shall keep unhealthy cows, or feed distillery waste or any substance in a state of putrefaction or fermentation, except ensilage, to a cow whose milk is to be sold in any form.

* * *

The Agricultural Association is not behindhand in feeling the new life of the college this year. The meetings are held every other week in Morrill 19, where the familiar classroom is turned into a debating hall. The women do what they can to make the evenings pleasant. One evening maple sugar was secured and, after the program, a "sugaring off" was enjoyed. Needless to say, the debates are much more successful and much better attended when the physical man knows that there is a treat in store for him. The following is the program for the second term, part of which has already been given:

Feb. 9—Debate, Resolved, That farm laborers should organize for their own interests.

Feb. 23—Farming in China, by John A. Gilmore.

March 8—Co-operation Among Farmers, by Mr. Stephens.

March 22—Agriculture in Florida, by George N. Lauman.

April 19—The Agricultural Frontier of the United States, by Professor J. A. Bonsteel.

May 3—The History of Our Agricultural Society, by former members, now on the faculty.

May 17—Recollections of Agassiz, by Dr. B. G. Wilder.

May 31—Students' evening and election of officers.

* * *

Last month Professor Craig delivered an address before the Massachusetts State Horticultural Society. He also spoke before Professor Waugh's class of the State Horticultural College at Amherst.

* * *

An application has been received by the department of horticulture from a leading nurseryman of the state for six or eight young men to work in the

nursery during the summer vacation. Applications have also been received for the following: a cemetery superintendent, an assistant horticulturist in a state experiment station, and instructor in horticulture, and for various minor positions.

* * *

Seventeen agricultural students are candidates for the degree of Bachelor of the Science of Agriculture, in June, 1904. Three more expect to receive the degree Master of the Science of Agriculture.

* * *

Some of our short course men expect to return to take a four years' course. Never in the same length of time will they learn more than they have been taught in the twelve weeks that they were "shorthorns." The dairy course students have been very successful in getting good positions.

* * *

Dr. C. E. Branson, president of the State Normal School of Georgia, spent the fifth and sixth of March as the guest of Dean Bailey. He came to Ithaca especially to see what Cornell was doing in agriculture, that he might take new ideas and inspiration back to Georgia. When he left he said that he wanted to come again and bring certain other leading men with him, that they might come in touch with the Agricultural College of Cornell.

* * *

J. M. Van Hook, A. M., assistant in plant pathology in the extension department, has accepted a similar position at the Ohio Experiment Station, at Wooster. He will begin his duties May 1st.

* * *

Charles Thom, Ph.D., assistant in mycology, has accepted a situation at the Connecticut Experiment Station. He will work on those fungi which are connected with the ripening of cheese. The work is in co-operation with the U. S. Department of Agriculture. Mr. H. S. Jackson, Cornell, '05, has been appointed to the position vacated by Dr. Thom.

There are 450 pots of strawberries in the forcing houses which are already setting fruit, and a second lot of the same number of pots which have not yet been started. Mr. Hunn expects ripened fruit from the first plants by the first of April.

* * *

Mr. E. A. Burnett gave a very interesting lecture on "Farm Buildings," March 10. Mr. Burnett was one of the originators of the "Deerfoot Farm." He has had a wide experience in designing dairy barns for the production of sanitary milk. His lecture dealt with the problems in the construction and management of barns for high-class dairies.

* * *

On the fourth of March the Agricultural Association of Cornell gave its annual banquet at the Clinton House. For several weeks beforehand the posters were displayed on the campus and in the city, and every one was talking of the fun in store. On the appointed evening the members of the College of Agriculture turned out in full force—there was an attendance of 154. Everyone came to enjoy the evening, and no one was disappointed. Between courses, the toastmaster started the college songs, and at the end of the substantial part of the repast, our Alma Mater introduced the "feast of reason and flow of soul." Dean Bailey spoke in his own inimitable style, telling what Cornell's prospects were for a new agricultural building. The memory of his words will last long after the menu has been forgotten. Then followed "bouts" between the "longhorns" and the "short-horns," hits on the faculty, as well as expressions of sincere appreciation, and home thrusts on individual students that brought hearty applause. No one could have proved a better toastmaster than Mr. Mann, with "Quips and Cranks and wanton Wiles,

Nods and Becks and wreathed
Smiles,
Sport that wrinkled Care derides,
And Laughter holding both his
sides."

FORMER STUDENTS

A. L. Kniseley, '91, B. S., '93, M. S., University of Michigan, who from 1896-1899, was assistant chemist of the Cornell Experiment Station, is now chemist of the Oregon Experiment Station.

'85, B. Agr.—C. E. Amoroso Lima writes us from Rio de Janeiro that THE COUNTRYMAN is cordially welcome.

'97, M. S. in Agr.—H. P. Gould, '93 B. S., Maine State College, is with the Division of Pomology, Department of Agriculture, Washington.

'98, Dairy.—Adrian C. Brown, after leaving college worked for the Canajoharie Creamery Company for three years. He was then employed by the Fabius Creamery Company for one year, but left in April, 1902, to accept his present position as manager of the Cincinnatus Dairy Company's new plant at Cincinnatus, N. Y. An indebtedness of \$2,000 has been paid under Mr. Brown's management.

'98, Winter.—Fred Andrews took a special poultry course in Rhode Island College in 1900, and was employed there as assistant poultryman for eight months. He now has charge of the poultry on the Upland Stock Farm at Solvay, N. Y.

'98, Winter.—W. C. Edinger died in the summer of 1901 at Otisco, N. Y., after an operation for appendicitis. Merritt E. Smith died of a similar operation in February, 1903, at West Camden, N. Y.

'98, Dairy.—Charles A. Grant is manager of the Shady Grove Creamery Co., Hutchinson, Kansas.

'98, M. S. A.—R. T. Junghanns is situated at Bayamon, Porto Rico, where he is running a farm, paying special attention to truck farming and poultry raising. He has the contract for street sweepings of a neighboring town, and uses the refuse as fertilizer on his farm. He is also interested in real estate.

'99, B. S. A.—L. C. Harlow is professor of chemistry in the Provincial Normal School at Truro, Nova Scotia.

'99, Winter Agr.—Oscar B. Deyo, '00 Dairy, is on the home farm at Little Falls, N. Y.

'99, B. S. A.—John W. Lloyd, '97, B. S., Wheaton College, took his master's degree at Cornell in 1903, and is now assistant professor of horticulture in the University of Illinois.

'99, Special.—Leonard E. Harrison took the winter course in 1898, returning as a special student in 1899. Since leaving the University he has been working at home with his father on their "Wayside" farm at West Winfield, N. Y.

'00, Winter.—Henry T. Moon of Morrisville, N. Y., is agent for the Morrisville Nurseries.

'00, Dairy.—A. C. Qua sends his subscription from East Hartford, and adds that *THE COUNTRYMAN* is just what he has been looking for to keep him in touch with the College and with former students, many of whom he has not heard from since leaving Cornell.

'00, Graduate.—Harmon Benton, M. S., is assistant agriculturist at the South Carolina Experiment Station.

'01, B. S. A.—Bryant Fleming who, with A. F. Brinkerhoff, '02, was in charge of the office of Manning Bros., landscape architects of Boston, Mass., announces the opening of a landscape architect's office on March 1st, under the name of Townsend and Fleming, 1326 Prudential Building, Buffalo, N. Y. Mr. Fleming was abroad last summer studying the country places of England and France.

'01, B. S. A.—Adams Phillips is at Washington College, Limestone, Tenn., teaching botany, physics, chemistry and civics, besides giving two lectures a week on agriculture and also managing the college farm. He is evidently a busy man.

'01, B. S. A.—M. M. Underdown. Our attention has been called to an announcement in the 'O Estado de S. Paulo, Brazil, of the reorganization of the school of agriculture, Luiz de Queiroz, of Piracicaba. "The teaching program of the school will be more practical than theoretical. The practical side is to be especially amplified, and in such a way that the students will do the work of the fields. Those who wish, will be remunerated for their services, and in addition the profits of the establishment will be proportionately divided among the students re-

ceiving such remuneration. Mr. Underdown, now director of the Fazenda Modelo (model plantation) of Piracicaba, is to become the director of the reorganized school upon the retirement of the present director, Dr. Luciano Jose de Almeida and of Professor Aristoteles Pereira.

'01, Winter.—Asa C. Cole is working on the home farm at Little Falls, N. Y.

'02, M. S. in Agr.—C. K. McLelland, '98 B. S. in Agr., Ohio State University, is instructor in soil physics and agronomy in the North Carolina Agricultural College.

'02, Winter.—John B. Lisk is making a specialty of White Leghorns on his poultry farm at Romulus, N. Y.

'02, M. S. in Agr.—A. E. Stene, '97 B. Agr., University of Minnesota, is now assistant horticulturist at the Rhode Island College of Agriculture.

'03, Winter.—J. R. Bodurtha, the very able president of last year's "Short-horn Club," is managing Livonia Plantation at Port Kennedy, Pa. Mr. Bodurtha is taking an active interest in *THE COUNTRYMAN*, and has sent in several names of prospective subscribers.

'03, Special.—E. Norton is engaged in missionary work at Dhaud, Poona, India. His present headquarters is at the Boys' Christian Home, an orphanage where there are 300 boys. Aside from having charge of the farm work, Mr. Norton is teaching a class of thirty boys. He writes that they are now (Feb. 10) plowing for the next rainy season crops.

CLASS OF 1902

Special.—Floyd S. Barlow is manager of the Chase farm, South Onondaga, N. Y.

Special.—Philip S. Barto is a student at the University of Illinois, Urbana, Ill.

Special.—Grover Beckwith is on the home farm at East Pembroke. Along with his subscription Beckwith sends best wishes for *THE COUNTRYMAN*.

B. S. A.—Arthur F. Brinkerhoff is in charge of the office of Manning Bros., landscape architects, Boston, Mass.

B. S. A.—Charles G. Brown, '96, Northwestern University, is editor of the *Holstein-Friesian World*, published at Ithaca, N. Y.

Special.—Bethuel V. Colburn is on the farm with his father at Bemus Point. We wish Colburn another year of as successful management as was his during the past season.

Special.—Earl D. Crocker is farming at Sennett, N. Y.

Special.—Daniel T. Dean is on the home farm at Nichols, N. Y.

B. S. A.—George W. Hosford is assistant in agriculture at Hampton Institute, Hampton, Virginia.

B. S. A.—Charles H. Kraatz of Akron, is doing a good deal of official testing for Professor Wing this winter. He has recently been at Mr. Matteson's Homestead Stock Farm, Ilion, N. Y.

B. S. A.—Andrew G. Lauder is chemist to the La Plume Condensed Milk Co. He recently visited the University.

Special.—Clarence A. Lewis is engaged in flower and vegetable gardening at Lockport. Like some of our other fortunate boys Mr. Lewis "doubled his joys" soon after leaving Cornell.

B. S. A.—William M. Morgan died last July at Morgantown, West Va. At the time of his death Mr. Morgan was assistant horticulturist at the Experiment Station and teacher in botany in the University of West Virginia.

Special.—Dorr M. McLaury is president of the Northern and Southern Company, dealers in lumber, located at Cornell, Marion county, Fla.

Special.—L. A. Parke is holding down the farm at Wesley. We still have a vivid remembrance of the red necktie that Parke wore to the agricultural banquet at the Ithaca Hotel in the winter of 1901.

Special.—F. T. Ransom is a student in animal husbandry at the Ontario Agricultural College.

Special.—Mary B. Rice was married in August, 1902, to Mr. C. William Beebie, ornithologist of the New York Zoological Park. Mrs. Beebie's address is 2307 Laring place, University Heights, N. Y. She is at present spending the winter in Mexico.

B. S. A.—T. M. Sowards is vice-

president of the A. H. Schultze Co., 198 West Broadway, New York city.

B. S. A.—Charles W. Wenbourne is secretary of the Horse World Co., publishing the *Horse World*, Buffalo, N. Y.

Special.—E. C. Welsh is a part owner in the Northern and Southern Company mentioned under McLaury.

Special.—E. T. Wheeler upon leaving Cornell was immediately taken into partnership by Barker & Co., of Billerica, Mass., and so did not return to the University as he had intended. The firm grows nothing but carnations and ships direct to Boston.

Special.—H. S. Williams is in the employ of Mr. Van Norden of Port Chester, breeder and importer of West Highland cattle.

Special.—Horace George Williams is a grower of flowering and cultivated plants at Silver Lane, Conn. Mr. Williams began two years ago with 3,000 feet of glass, and has had such good success that this summer he intends to double the area. At the time of writing, February 15, he was busy with seed-beds for outdoor planting, and was also stocking up with carnation plants for next year's crop. During the summer Mr. Williams is general overseer on the farm of G. A. and H. B. Williams, who conduct the largest market garden farm in that vicinity.

Of the following '02 special students we know only the original home address: Chester A. Burton, Brocton; Guy C. Johnston, Bloomington, Ill.; Charles H. Kenyon, Morton; F. L. Miner, Oxford; George F. Orr, Scranton, Pa.; George H. Roth, Brooklyn, and L. J. Singewald, Baltimore, Md.

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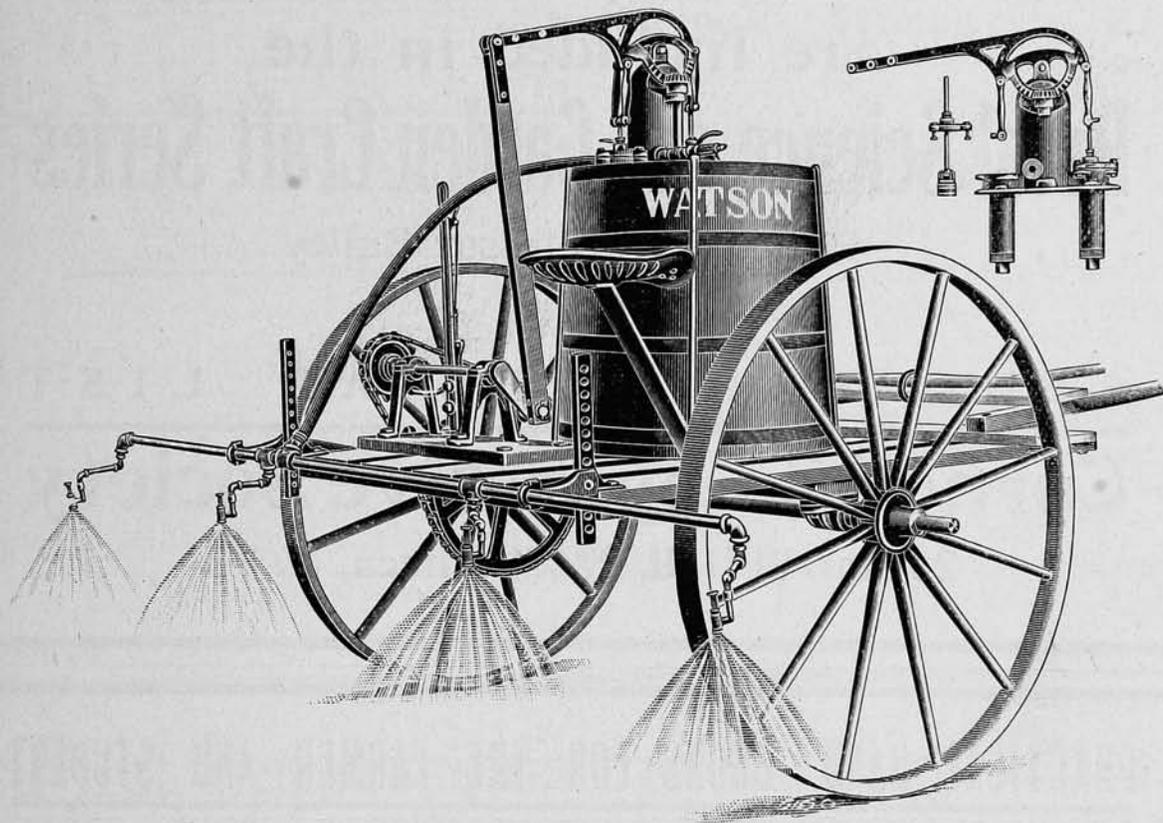
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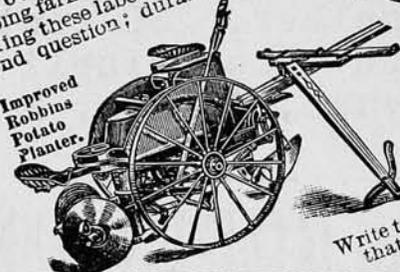


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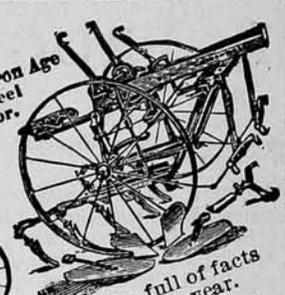
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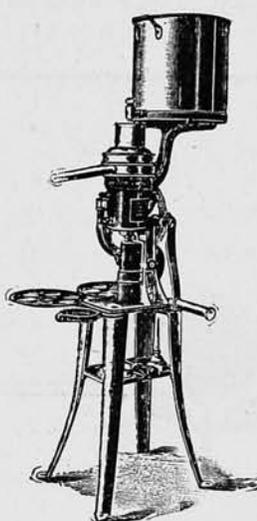
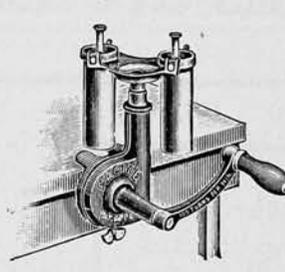
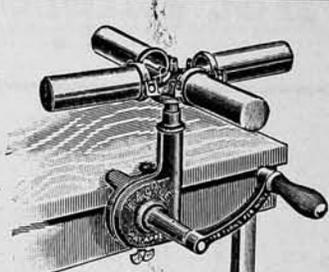
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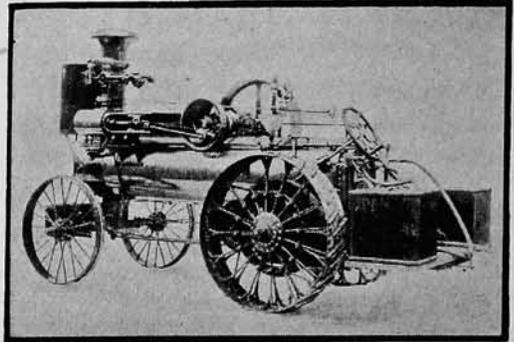
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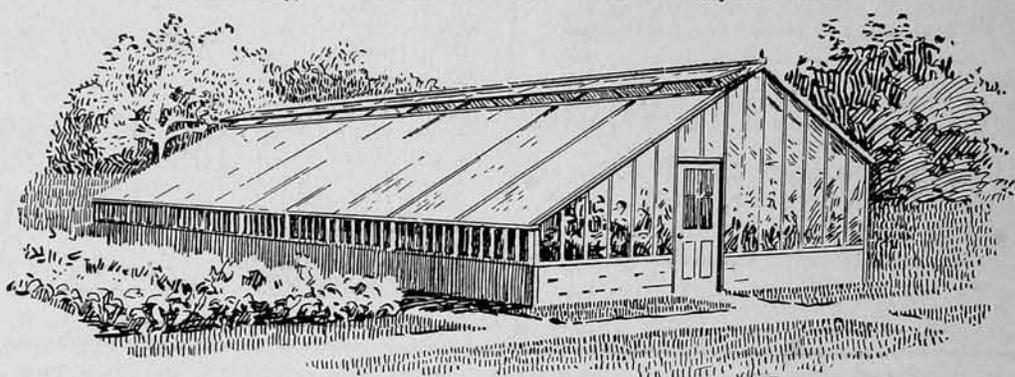
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VOL. I

May 1904

NO. 6

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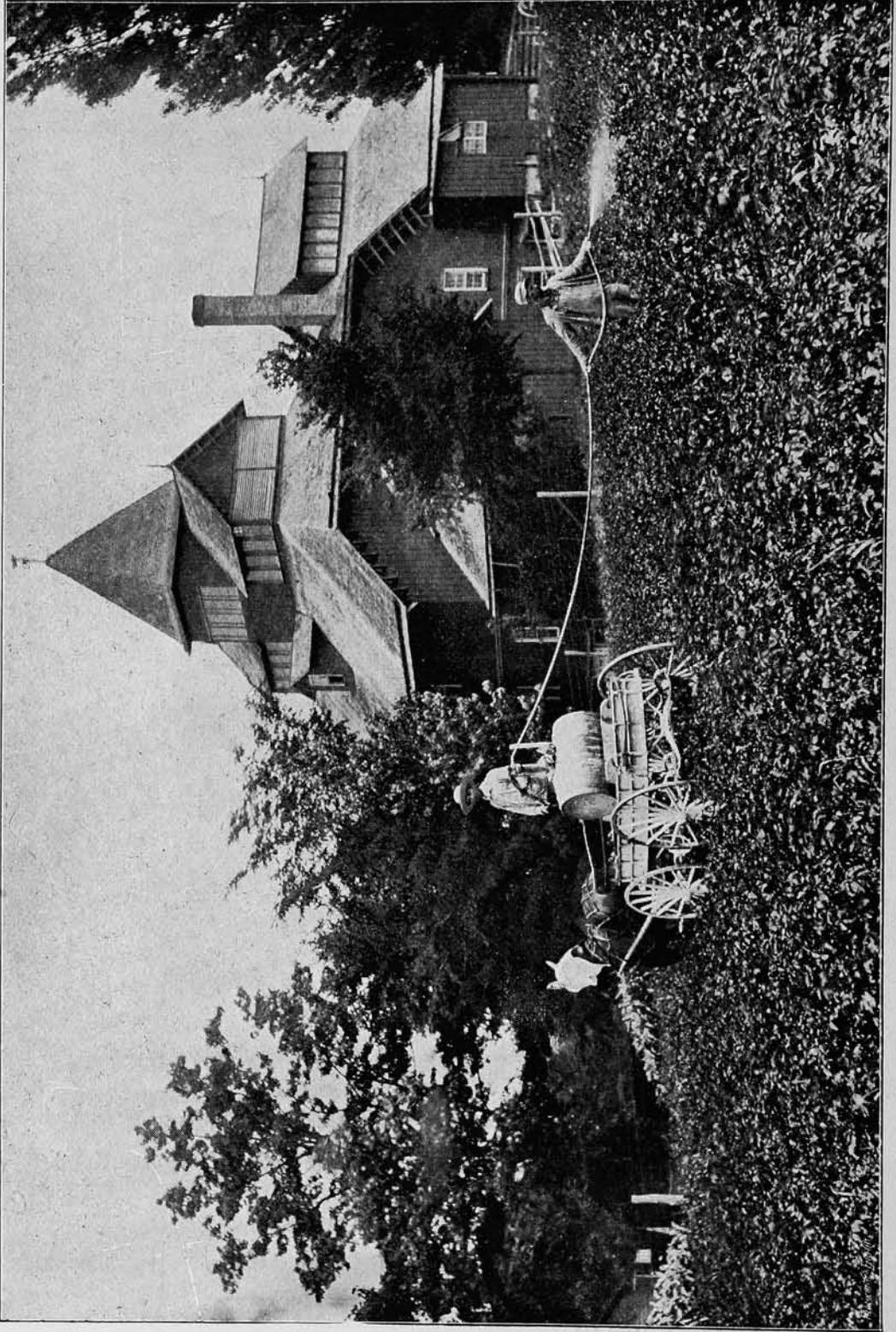
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BUSINESS MANAGER



ONE OF THE COLLEGE OF AGRICULTURE BARNES

THE CORNELL COUNTRYMAN

Vol. I

MAY, 1904

No. 6

THE OUTLOOK FOR AGRICULTURAL EDUCATION

III. IN NEW ENGLAND

By Rufus W. Stimson

President of the Connecticut Agricultural College

NEW ENGLAND is small in area. We are told, and convincingly too, since we are pretty good travelers, that the whole of New England could be dropped into one of the great states of the West or South, and still leave land within the state border for more than one good sized county. Nevertheless, each community has its peculiar characteristics. There is considerable diversity among the small states of New England. Our little area presents large local problems.

It is doubtful, in fact, if any one of the presidents of the land-grant colleges in New England is prepared to speak authoritatively regarding the whole New England outlook for agricultural education. Here, as in other parts of the country, each land-grant college has been permitted, if not actually encouraged, by the central authorities at Washington to develop in such a way as best to meet the demands of its own state. In the application of its Federal funds each state has sought to solve its own peculiar problems. What one may say, therefore, will doubtless be found to reflect better the conditions of his own locality and the institution he represents than the conditions of New England at large.

With this note of warning, or, if you please, of introductory apology, certain observations may be written.

In New England, agricultural education must always meet three distinct tests. And the first is the test of the college.

New England at its best is devoted to advanced education as a serious pursuit. It is noted for its theologians and

philosophers, its scientists and historians, its statesmen and its men of letters. For scholarly aspiration it has been marked from the beginning. Of this more than one visitor at Harvard College has been eloquently reminded as he has paused to read on the tablet beside the college gate the following inscription:

“After God had carried us safe to New
England and wee had
Builted our houses,
Provided necessaries for our livelihood.
Reared convenient places for God's
worship
And settled the civil government,
One of the next things we longed for
And looked after was to advance
learning
And perpetrate it to posterity.”

The New Englander of culture and means still dies in disgrace who dies without a bequest for the furtherance of liberal education. High scholarship in New England is not merely a badge of honor, it is a mark or respectability.

So pervasive is this atmosphere that it colors all our scholarly pursuits. And our outlook for agricultural education is bright or dark, here or there, in proportion as our agricultural educators exhibit high attainments in their departments of scholarship, and in proportion as the baccalaureate degrees awarded our graduates represent the achievement of a distinctively baccalaureate grade of education.

The second test which must be met by New England agricultural education is the test of the factory. Here the hum of the mill and the clanking din of the shop are incessant. Our little corner of the country is the home of myriads of mechanics, inventors

and improvers of machinery, producers of countless products of utility and ornament; it has long been noted for the variety of its attractive and indispensable articles of commerce. The Yankees are no less famous for their ingenuity than for their wide-awake progressiveness in manufactures; their boots and shoes, their fabrics of cotton, wool and silk, their rubber and paper goods, their finished mechanisms and their metal work in silver and copper, brass and steel are known and valued world-wide.

New England, that is to say, is not less a great, earnest college than it is a great, busy factory; the fame of our scholars is scarcely broader than the good reputation of our mechanics. And the measure of success in the mechanic arts is notable skill and enthusiastic, unremitting energy in the production of marketable articles. Our factories are perpetual schools of skill and aggressive enterprise.

The result is that agricultural education in New England, as a means of advancing the production of improved agricultural commodities—and this is an essential element of its activity—must continually be measured by the degree of skill and effective energy it exhibits in its results when these are subjected to this second test, the test of the mechanic arts. And the outlook for our agricultural education will be bright or dark in proportion as this measurement is favorable to it or the reverse.

The third test is the test of the home. The nature of a home waits, in some degree at least, upon the revenue of the head of the family; it waits, also, upon the prevailing taste of the leading members of a household. Taste is largely a matter of education, revenue depends in the main either upon education or upon skill, perhaps upon a combination of the two. This third test is not, however, merely secondary to one or the other of the first two; rather, as here regarded, it is independent of both. The question here is, does the normal life of the farmer result in as good a home as the normal life of the scholar or that of

the mechanic? Give the farmer scholarship, give him also skill and enterprise in production and marketing, what sort of life is his home life? Is the best agriculture as a calling, on the whole, coarsening in its tendencies, or, on the whole, refining? How, in the balancing elements of vigor and refinement, does the home of the average farmer compare with either the home of the scholar or the home of the mechanic?

There is, perhaps, no test to which a New Englander is more acutely sensitive than a comparison of his home with that of another. Agricultural education must make possible a pleasant comparison between the home of the educated farmer and the home of his fellow New Englanders who follow other pursuits or professions; and the outlook for New England agricultural education will be bright or dark, in one locality or in another, in proportion as it makes such a comparison either pleasant or the reverse.

In these observations it will be seen that the peasant farmer is left out of consideration, as are also unskilled laborers in general. Also, whatever antagonism may exist in certain cases among what may be termed old-line farmers toward the new is left out of account. Comparisons can properly be drawn only where there are at least certain points of resemblance. New England agricultural education in general is vitally involved with whatever makes for high scholarship, skilful enterprise and a good home. Comparisons in these matters are inevitable; they are, indeed, to be courted by all who prize rural life and are working for its welfare.

It is probable that each of the land-grant colleges in New England,—the special sponsors here for agricultural education, is more or less acutely conscious of this three-fold test of its success, and to the best of its ability is endeavoring to meet it.

Responsive to the demand for respectability in relative standing among the other higher institutions of learning, it is noticeable that our agricultural colleges are conferring the degree

of bachelor of science, and are uniformly maintaining the high standard for admission to B. S. courses customary among the greater number of the New England colleges. One, at least, is even conferring the degrees, M. S., and Ph. D., for advanced study of a high order in one or more branches of agricultural science.

If there is a danger in this rule of effort, it is that the purely scientific interest will predominate to the exclusion either of training in the practical operations which demand first of all skill and intelligent enterprise in the production of improved agricultural commodities for market, or to the exclusion of those elements of broad education which make for the best type of New England homes. This danger, however, is, apparently, clearly recognized. In the college where the highest degrees are conferred, as well as in our other colleges, supplementary shorter courses are being given in which the primary object is skill and business methods. Among these are courses in dairying, pomology, poultry culture and truck gardening. In at least one college, parallel with training for farming, courses in home economics (domestic science and art), and in general education, open to young women, are being given. In this case the young men and the young women attend the same classes in such studies as Latin, English and German, political economy, history, botany, physiology, chemistry, physics, mathematics, geology, entomology, ornithology and music. This College expects to supplement its work still further the coming year, by giving another parallel course of two years of preparation for rural school teaching, or the special teaching of nature-study, open to graduates of high schools. In this course the pedagogy of nature study will be given the greatest prominence in the interest of the intelligent and skillful teaching of the children of those who love rural life, or whose lot has been cast in rural communities. This college, also, the coming season will hold its third annual Summer School for teachers and others in na-

ture and country life. All of our land-grant colleges provide and insist that large elements of liberal education be had along with their training in the science and practice of agriculture.

The land-grant colleges of New England are no less potent in the influence they exert upon those phases of agricultural education represented by the agricultural press, the granges and the farmers' institutes. Our professors are continually called upon for making current and easily available for the average farmer the results of scientific agricultural research,—few papers are published without articles from their pens, few programmes of speakers are made up without including one, or several of them. Indeed the demand for help through these more popular aids to agriculture is greater than our colleges can well supply, without putting in jeopardy the first duty our professors owe to their college work proper.

We have much yet to do in maturing research for alleviating local difficulties, in devising improvements in practical operations, and in perfecting our teaching methods both at the colleges themselves and in the more popular work of press, grange meetings, and farmers' institutes. But judging from the steadily increasing attendance at our colleges, from the demand for our graduates which at present we are far short of being able to supply, and from the widely developed confidence in our men, methods and results among practical farmers, it is safe to say that, among our leading people of the distinctively agricultural vocation, the outlook for agricultural education was never so bright as it is to-day. In all this we find that marked progress has been made.

If we continue earnestly and intelligently to work, we may modestly wait for the judgment of another day upon the relative standing of our calling and of our home life when tested by the standards of our neighbors in other pursuits and professions.

To be sure, we have more or less radically reversed the point of view

of the old inscription on the Harvard gate. So, for that matter, has Harvard herself. Educators in New England in general and the rank and file of our best citizens, look upon education, not less as an end in itself or as something to be "perpetrated to posterity," but more as a sound means to improved vocational efficiency and to better, fuller, more gentle and more intelligent living in our own day and among ourselves. Not after, but before we settle the civil government,

do we long for and look after education; not after, but before we build our houses, provide necessaries for our livelihood, and rear places for God's worship, do we cherish it.

Posterity must put upon the heritage we bequeath its own appraisal. Posterity, we believe, will accord us high gratitude for the educational gains we are achieving. In working for to-day, we are not unmindful of the days to come.

SANITARY MILK—ITS FUTURE

By R. A. Pearson

Professor of Dairy Industry

IT is only within the last ten or fifteen years that we have heard much about the need for more-sanitary milk for our markets. And it is only within the last five or ten years that we have seen much accomplished along this line. The old idea of pure milk,—and this idea still prevails in the mind of the majority,—was that it should be unskimmed, unwatered and free from foreign substances, such as coloring matter and preservatives, besides being "sweet," free from bad flavor, and reasonably clean. Little else was considered. This view, which now is seen to be very insufficient, has been carried into the laws governing market milk and into the official milk control, and often to such an extent as to exclude attention to equally or more important features.

The new idea of market milk gives special weight to its sanitary condition. Bacterial contamination is not considered less important than faults in composition, although the latter have so long been held foremost. It is found that the wholesomeness of milk is affected by the manner of its production. It is an article exceedingly well adapted to bacterial life, and, as dairy work is ordinarily carried on, there are literally scores of ways by which the tiny organisms obtain entrance. Certain pathogenic bacteria

find milk an ideal habitat. If they are conveyed to it by a sick person or animal or by a person who has come in contact with a patient suffering with a contagious disease, or if they are conveyed to it by water used to rinse the milk utensils, or otherwise, they may infect the milk consumer. But such contaminations are not common and harm from them is far less than that due to the many forms of non-pathogenic bacteria that cause milk to sour, putrefy, and undergo other changes some of which are not observed until their evil effects upon the consumer are in evidence.

Milk produced and handled in a careless manner will be found often to contain a million or more bacteria per cubic centimeter,—so rapidly do they get into milk when conditions are favorable and so rapidly do they multiply after entrance.

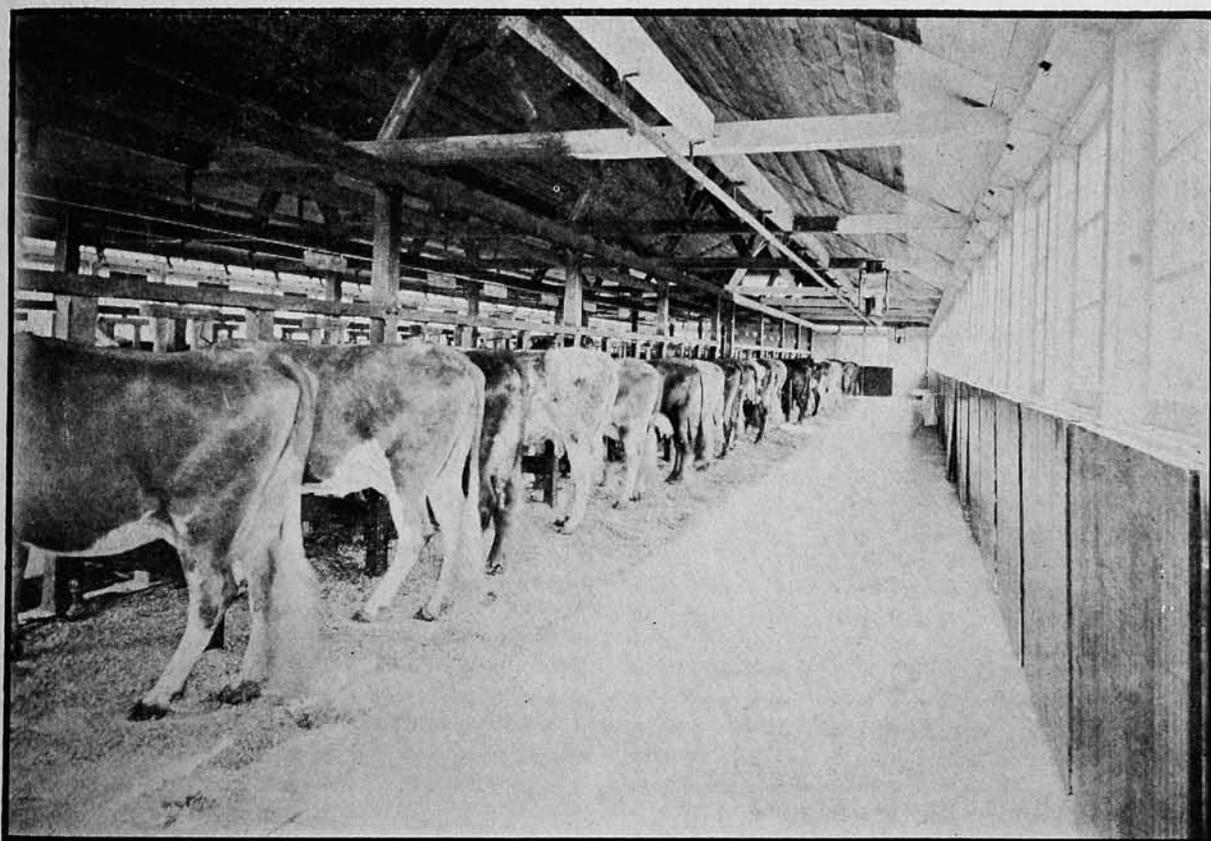
But one who will follow the rules of sanitary science in the management of his dairy can easily produce milk which will contain only about one one-thousandth as many bacteria as just named and with reasonable certainty that pathogenic bacteria are wholly excluded. It is worth while to make such milk? It means a high grade of intelligent management and and some increase in cost for labor.

The future for this advanced or modern branch of dairying is promis-

ing. The change may seem to be coming slowly, but when one compares the situation of to-day with that of fifteen years ago, it is seen that much progress is being made. Then it was a great exception to find a dairy conducted in a strictly sanitary manner, indeed there was none to equal numerous dairies supplying milk to many of the larger cities at the present time. One evidence of the increase in the number of these "sanitary" dairies is the fact that during the last few months the Cornell Dairy School has been asked to recommend more of its

decade numbers of reports and general articles have been written upon this subject and they furnish convincing proof that the quality of much of the milk supplied to the cities is not as good as it should be.

It would seem that any dairyman or milk dealer making an earnest effort to furnish a good, clean article of milk and to serve it in a reliable manner, would have more trade than he could attend to. Unfortunately this is the case only in exceptional instances. Perhaps the chief drawback is the unwillingness of the public to pay a fair



A SANITARY DAIRY

students than were available for responsible positions in these places.

The public is being slowly educated to see that the public health depends in large measure upon the character of the milk supply, and gradually a demand for better milk is being developed. To more than anything else, this change is due to recent extensive bacteriological investigations of market milk and the attention recently given the subject by physicians and other scientists who have observed in actual tests the advantages of sanitary over unsanitary milk. Within the last

price for high grade milk. Every one acknowledges the importance of milk as a food product and of course it is well known that it is often the exclusive diet of young and delicate children and of invalids, and that it is generally used in the raw state, yet very few will pay enough extra for their milk to enable it to be produced in a way that would satisfy them if they would take the trouble to look into this important phase of the business. This seems the more remarkable when it is remembered that the public appreciates and is willing to pay

for high quality in almost all other commodities. In countless households there is never a thought of purchasing any meat but the highest priced cuts or any food other than the best the market affords, except milk, which is looked upon as being the same wherever it comes from or whoever sells it, therefore a low-priced milk is sought. Every householder ought to know that milk is a most delicate product and subject to many kinds of contamination in many different ways, and if these are to be considerably reduced or entirely avoided the cost of production will be increased. And the cost will be increased in constantly greater and greater proportion as the contamination is decreased. Up to a certain point many dairymen could improve their milk without noticeable increase in the money cost of production. But even this improvement should be paid for by the consumer because it is the result of extra intelligent effort and supervision which are high-priced commodities. When so high a quality of milk is wanted that much extra labor is required in its production in order to reduce bacterial contamination just as far as possible and assure a wholesome composition at all times, then the cost of production is increased one, two or three cents or even more per quart. The increased cost is due to increased vigilance over the health of the cows and of the employees who

handle the milk; the increased labor of keeping the cows and their surroundings and all the surroundings of the milk clean and in good order; the thorough sterilization of all utensils; the frequent renewal of utensils; and the use of an abundance of ice. Almost everyone would want his milk handled in the most approved manner as indicated if he were familiar with it and the usual procedure. Up to the present time only a small part of our population has been "converted" to the new idea, but the subject is constantly getting more and more attention and it has been developed far enough to prove that the movement for better milk will continue to go forward and not backward.

One of the most efficient agencies for promoting the interests of sanitary milk is the so-called Milk Commission. Such commissions have been organized in some of our larger cities, by physicians who are interested in pure milk primarily because they want it available for their patients. The Commission closely supervises the production of milk at dairies operated under the terms of an agreement that insure a first-class product and gives its official approval to such milk, thus removing much cause for doubt that would naturally come into the mind of the consumer as to whether or not the milk was really produced in the manner claimed.

AGRICULTURAL ENGINEERING

By S. Fraser

Instructor in Agronomy

THE subject of agricultural engineering is not yet taught in good pedagogical order. It has recently been recognized as a course in a few of our agricultural colleges, and is defined in Circular 45, Office of Experiment Stations as "the science and art of laying out farms, designing and constructing farm buildings and works, and making and using farm implements and machinery." From this definition, we may divide the work

into two distinct sections: 1, Estate work, including rural architecture and road making, etc.; 2, Farm mechanics, the making, usage and care of farm machinery and implements.

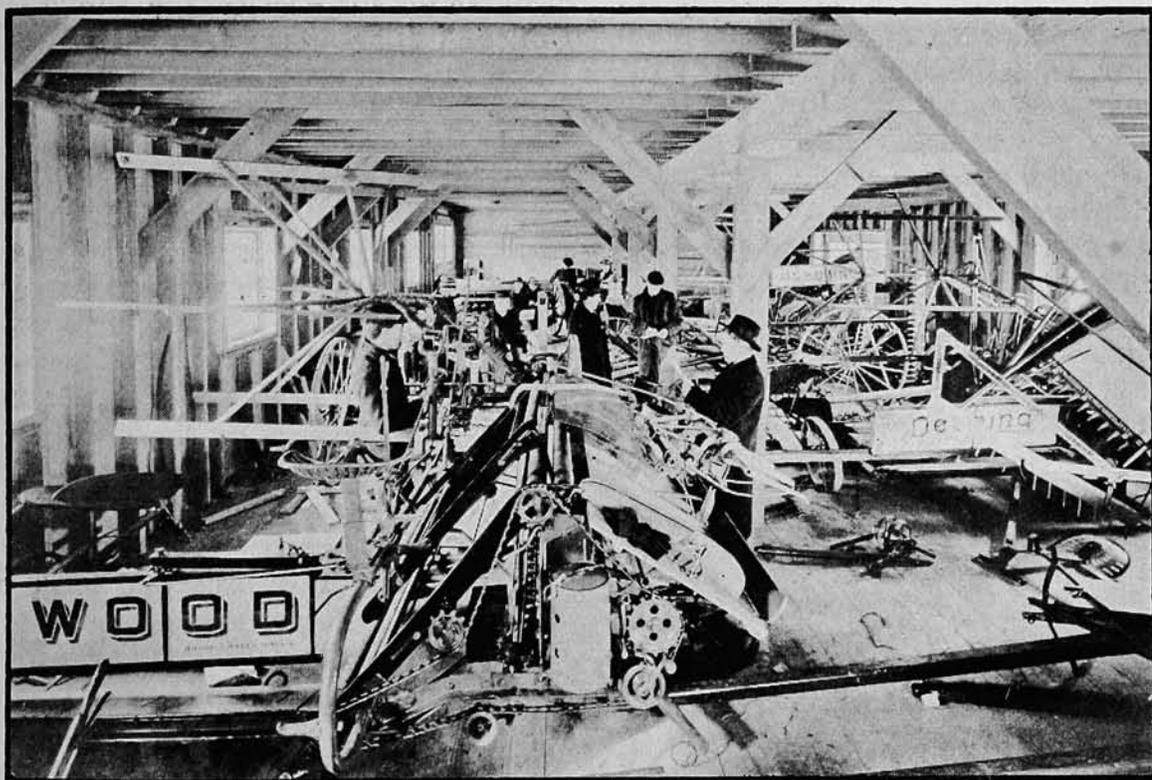
The average value of the land of a farm in the United States is \$2,285, the buildings on it being worth \$643. The average value of the land of a New York farm is \$2,431, that of the buildings on it being \$1,505 more. The total value of the farm buildings

of the United States in 1900 was \$3,560,198,191, quite an imposing sum. New York farmers have \$336,000,000 sunk in buildings, or nearly one-tenth of the total in the United States, and \$56,006,000 in machinery. No other state has so much capital in buildings, and Iowa, with \$57,960,000 is the only one having a larger sum in implements; Pennsylvania with \$50,917,240, Illinois \$44,977,310 and Ohio with \$36,354,150 are the next leading states.

The importance of labor saving machinery is shown by the reports issued by the Department of Agriculture. In

export any agricultural produce.

The total value of the implements and machinery on the farms of this country in 1900 was \$761,261,550, an average of \$133 per farm, or 90 cents per acre of farm land; in 1850 the value of implements was \$151,587,638 or 52 cents per acre. About \$100,000,000 worth of machinery is now purchased annually by our farmers. It takes 1,000,000 plows per year to supply the demand, and nearly 500,000 harrows and the same number of cultivators. During the two decades, 1880-1900, the average number of acres of land per male worker in-



A CLASS IN FARM MACHINERY

1830 it took over three hours' labor, costing $17\frac{3}{4}$ cents, to raise a bushel of wheat; in 1896 it took ten minutes, costing $3\frac{1}{3}$ cents. Hay growing is an important business in New York; in 1860 it took $35\frac{1}{2}$ hours labor at a cost of \$3.00 to grow and bale a ton of hay; in 1894 it took $11\frac{1}{2}$ hours, costing \$1.29 for labor. The total saving in labor in the production of the seven crops: corn, wheat, oats, rye, barley, potatoes and hay, in 1899, compared with the old-time method was \$681,471,827, all due to the utilization of modern machinery and methods. In other words without our present devices and ways we should be unable to

creased from 23.3 to 31 acres, or 34%; and the number of horses worked per male increased from 1.7 to 2.3, or 35%. In other words, labor saving machinery increased the area of land that one man can work 33%. To effect this increase, the farmer has not expended a larger proportion of his capital in implements; in 1850, 3.8% of his capital was sunk in this manner, while in 1900, the amount so expended is given as 3.7%; hence we presume that our modern tools are more efficient.

Estimates based on observation, show, that farmers are so careless with tools that on an average the life work

of a plow varies between 150 and 250 acres. If a plow costs \$10, and it plows 200 acres, the cost is 5 cents per acre. We have about 9,000,000 (estimated) plows on all farms, and last year, these plowed about 180,000,000 to 200,000,000 acres, averaging about one plow to 20 acres of plowed land. Some machinery is quite elaborate and complicated. A modern grain binder consists of over 700 distinct parts. Such machines require considerable skill to operate. The losses on the farm from unskillful handling and neglect are enormous; thus, on one farm I know, a man has a "Farmer's Favorite" grain drill he bought 15 years ago, and it is practically as good as ever, while his neighbor has bought three in the same time. It is necessary to discriminate between being careful with machinery and using antiquated machinery. It is folly to use antedeluvian types of implements. No farmer can afford to do so.

European nations, while not using implements so efficiently as we, are paying considerable attention to their study. The Agricultural High School at Berlin has a well developed and efficient department of farm machinery; Scandinavian and Russian agricultural authorities and colleges realize the importance of instruction in these lines. I do not know a single British agricultural college that has one man devoting his whole time to the study of farm mechanics, although it has been in their curriculum for many years, and much valuable information

is derived from tests of all kinds of machinery at the various agricultural shows.

Professor King of Wisconsin is credited with being the first American to give instruction in farm machinery. Among others the following colleges now have courses and state appropriations for this work: the Iowa Agricultural College at Ames, has recently erected a four-story fire-proof building, costing with equipment nearly \$70,000; the Wisconsin College has a state appropriation of \$15,000 for a farm engineering building; the North Dakota and Illinois colleges have had a course for some years; the Minnesota College has an appropriation of \$5,000 for a building, and has the use of a large building for storage of implements. A course of one semester has been introduced in our own college, and two floors of the south barn are now occupied with implements loaned by various manufacturers for instructional purposes. This building would accommodate but \$2,000 worth of implements, and an offer of about \$3,000 worth more is held in abeyance until more commodious quarters are obtained. The plan is that the implements will be taken apart, set up, adjusted and used for draft tests and trials in the field, to demonstrate their uses, methods of manipulation and principles of construction. Although the beginning is small, this course is one in which, on account of the interests at stake, developments must come.



STUDENTS MAKING THE FOUNDATION FOR THE JUDGING PAVILION

SOMEWHAT ABOUT JAMAICAN FARMERS

By Scott Perky

I PRESUME our readers would not be at all interested in statistical statements about Jamaica, and lists and descriptions of the agricultured products thereof. In their conception, I may suppose, as it was in mine until recently, Jamaica has an indefinite existence, or, at the most, is a small island nonentity situated in the Antilles. To be sure, extensive advertising has recently brought the Island to notice as a winter resort. This advertising is not concerned with its economic importance but with its entertaining qualities. Consequently pleasure-seekers are there in considerable numbers. This indefiniteness about Jamaica makes me feel that the registering of a few impressions of more or less general application will be more acceptable than any attempt at comprehensiveness.

The population,—which, by the way, is always the most important feature of well populated countries,—is largely black, a large proportion, also, is colored, while but about 15,000 out of a total of over 700,000 are white. For years the Island has belonged to the English, and their language and institutions are universal. The character of the population is mostly due to the slave trade with Africa, which was in full blast until somewhat less than a hundred years ago. In 1834 the abolition of slavery opened the way for the free develop-

ment of the dark peoples, but committed the Island to a condition of economic anarchy that in large measure ruined many of its agricultural industries. The people, through the use of simple but mistaken logic, misconstrued the meaning of liberty, and proposed to imitate the indolence of "massa" to the neglect of their own interests and therefore of those of the state. An unconquerable suspicion of the white man led the negro to unduly question his every motive, and the fear that on

every hand traps were set for his re-enslavement was sufficient to make him shrink within himself and raise or steal the food necessary for existence and contentment. The white man himself, brought up as master, looked upon these novice-freedmen with contempt, and long resisted with all the intensity of extreme prejudice those who saw large possibili-

ties in the negro and wished to develop them. Thus for many years prosperity was thwarted, and in the absence of this agent the missionaries and some few others alone contended against a relapse of the negro population to barbarism, while the enlightened thought at the world-centers very slowly found its way to this distant corner and more slowly still effected any change in insular opinion.

At length there became evident a very gradual awakening, and the assumption of a more liberal attitude to-



A PRIZE HOLDING AND ITS OWNERS

ward the negro was manifest. Law-makers became more considerate of his rights and observant of his needs, and educational facilities were improved and extended. To-day a strong liberal element among the whites asserts that Jamaica is preeminently a black man's land, and that therefore the government should be chiefly concerned with advancing his interests.

In view of this it should be interesting to inquire somewhat about the present condition of the agricultural population. Jamaica, it need hardly be said, is almost entirely agricultural. Excepting the capital city there is no large town on the Island. Little manufacturing is done, and the villages and port towns exist largely by virtue of their utility to agriculture. The population is gathered rather densely wherever the soil is readily remunerative, but small culture is carried on by surprising numbers in rugged and difficultly accessible parts of this mountainous Island, where it would sometimes seem as if the soil must be diligently searched for between the rocks. The coastal and upland plains still have many of their large plantations worked by hired labor; but the valleys and uplands are witnessing a very general breaking up, though rental and sale to many small farmers. Five, ten and twenty acre holdings are very usual, though many have less as well as more. The people generally live in small houses; or, to our way of thinking, shanties, but in prosperous communities, house enlarging and improvement has been going on for some years. Among the small holders one finds great differences in the standards of living,—differences that may be attributed in large part to degrees of intelligence rather than to unequal means. The people themselves are not particularly different in appearance from those in our South. If anything they have milder features and gentler ways. I suppose these differences are due in part to differences in race or the mingling of races, in part to climatic differences, and

probably in large measure to the civilizing influences of a dense population. Their faults are those of a primitive people. Their vices are simple and often impossible for them to understand as vices; and indeed we must expect this year to be so, in some measure, for our code of ethics would in several respects be "foolishness" to the natives of the tropics. It must not be forgotten that there are many cases of high intelligence among the blacks, and more frequently still among the colored people, but in this short article, the average of the farming population can alone be considered.

The accompanying photograph of an old couple is, to the writer, very interesting. Slaves together on a plantation, they married a year after slavery was abolished, in 1835, and just now,—perhaps both over ninety,—they have earned a government prize for the best holding of five or less acres of farm property in their parish.

These prizes are small amounts, as 5, 10 or 15 dollars, and framed certificates which are presented to those gaining the first prize. The judges take into consideration almost every feature about the holding,—not only the character of the plantings but the general neatness of the place, the character and cleanliness of the house, the character of the flower gardens, fences, etc. There are first, second and third prizes for holdings up to five acres, up to ten acres and up to twenty acres.

An important trend in Jamaica to-day is the increase of small holdings and the embarrassment and the breaking up of many of the large plantations. The causes of both may be readily explained, though they can hardly be mentioned here. Plantations of products like sugar-cane and coffee, which require handling on a large scale to be profitable, have to contend with active competition elsewhere, and in case of sugar, the beet sugar competition is most disastrous. The ability to compete is frequently in large measure impaired by the use of out-of-date methods and machinery,

but is also in large measure directly impaired by unsatisfactory labor conditions. Plantation labor is unreliable in many ways. It is largely quite unskilled, most unintelligent and indifferent to results. With money in pocket the laborer shirks his work, and reappears only when his needs require it. Of course, there are many exceptions; but the unreliability of the workers is too generally complained of to be considered the exception instead of the rule. The laborer most frequently has a plot of ground to himself, and it is found that this detracts seriously from his other work. Cane must be cut and hauled to the mill at certain times; coffee must be picked every few days. An unanswered call for workers has frequently witnessed spoiled crops and disheartened growers.

There appear to be two main causes for unreliability,—the love of ease and the preference for one's own property. There might also be mentioned two negative causes, low wages and lack of stern supervision. There is no doubt that the preference for one's own land has a very large influence on Jamaican labor conditions. The lessening of the large plantation area is accompanied by a proportional increase of small holdings, where families raise their yams, cane, corn, cocoa, cocoanuts, ginger, bananas and plantains,—enough for themselves and for the women buyers, who carry loads of produce on their heads to market.

Under the present individual system it is not economical for them to raise much sugar-cane or much of any product that requires expensive preparation for market; but there are several products of export, as cocoa, for example, that can be raised to great advantage by the small grower. The future is one of promise to him who will work a few acres industriously and intelligently. It may readily be seen why the worker prefers his own ground, and why Jamaica is becoming preeminently a country of small holdings. They suit the economic condition best, and accord more nearly to the negro's new conception of liberty.

It is not considered intelligent there to be very hopeful in regard to the negro population. There is one thing to be said; Jamaica affords an unusual opportunity for the happiness and perhaps for the civilizing of a black people. With a government that will be more considerate and intelligent than it has been in the past, and with schools in sufficient numbers that will not long neglect the agricultural features in education, we can reasonably expect a gradual improvement in the people, who, living within earshot of each other along the excellent highways, must learn the requirements of social intercourse and the advantages of industry, while content with the society and diversions of a compact rural community.

Flower in the crannied wall,
 I pluck you out of the crannies:—
 Hold you here, root and all, in my hand,
 Little flower—but if I could understand
 What you are, root and all, and all in all,
 I would know what God and man is.

—Tennyson.

THE ANIMAL INDUSTRY EXCURSION

By H. Truckell

Professor Wing, Professor Foord of Delaware and a party of students went to Syracuse last month, to inspect dairy herds in that vicinity. We were met at the station by Mr. Wing R. Smith, who took us by trolley to his farm. Mr. Smith has a remarkably uniform herd of Holsteins and we found much of interest around his establishment.

The next morning the party journeyed to the Village Farm at Liverpool and studied Mr. W. C. Hunt's herd. To encourage the students in Animal Husbandry, Mr. Hunt offered prizes of \$10 and \$5 for competitive judging. A ring of two-year-olds and another of four-year-olds were the subjects. The animals were closely matched and the contest was close and interesting. Mr. Walter Ira Thompson of Holland Patent won the first prize with Mr. Jay Clark Hungerford of Ithaca second.

We then went to Moyerdale to inspect the great collection of cattle headed by Sir Korndyke Manor De-Koel, and including nineteen cows. Each of these cows has given over 16 pounds of butter fat in one week. The barn arrangements called forth the admiration of the party, while the spic and span beauties seemed to be proud of the comments they received. Mr. H. A. Moyer is to be congratulated upon both the buildings and their occupants. Cornell men were met at each place as each herd was being officially tested.

The Brown Swiss herd of Mr. Hazard was last visited. There a different type of animal was seen. The large size, docile yet vigorous appearance of these, called forth favorable comment.

Owing to illness in the family of Mr. Dawley of Fayetteville his fine Jerseys were omitted from the list.

The consensus of opinion among the students was that the trip was all too short. The kind and generous

treatment received from the various owners, the absence of reserve and the freedom with which business questions were answered, made us wish that the trip could be repeated. It is to be hoped that the little excursion will be extended and become at least an annual affair. The knowledge acquired by the judging practice, and the observation of the methods of practical business men, who are making a success in the profession, will be of inestimable value to the future farmers and breeders.

After the journey a vote of thanks was given to the various owners for their courtesy and kindness and especially to Mr. Hunt for his kindness and generosity in offering the prizes for judging.

VOLUNTEER ORCHARDS

By C. S. Wilson, '04

Last year a volunteer orchard movement was started for the purpose of establishing the value of certain varieties of apples which at the present time are not considered commercial. The method asks for volunteers of two kinds: (1) the nurseryman who will volunteer to furnish the trees and (2) the man who will volunteer to grow the orchard.

Last year a beginning was made by the establishment of two volunteer orchards. This year six additional orchards are being set. The size of the orchard is variable. It will not be less than one acre and usually does not exceed a capacity of 100 trees. The leading varieties which are being tested are: Spitzenburg, Sutton Beauty, Rome Beauty, Wealthy, Wolf River, Dutchess, Mackintosh, Salome, and others. An agreement is entered into between a committee of the Western New York Horticultural Society and the planter of the orchard which provides for the proper continuance of the experiment. The work is in charge of the Western New York Horticultural Society. Professor Craig is the chairman of the committee.

EDUCATION FROM A SPECIAL TRAIN

The special railroad train as a factor in farm education is the newest thing in Iowa. The Rock Island has invited Professor P. G. Holden, at the head of the department of agronomy of the Iowa College of Agriculture, to tell the farmers along the line of the road in that state the importance of selecting good seed corn and explain how it can be done. He will also impress upon them the importance of testing all seed this year.

For this purpose they have placed a special train at the disposal of Professor Holden, and in company with George A. Wells, secretary of the Iowa Grain Dealers' Association, will make a three days' trip over that part of the state where the most good can be accomplished.

Mr. Wells has arranged a schedule and the farmers in the neighborhood of the respective stations have been notified and will be present when the train arrives to hear Professor Holden talk. He will speak about twenty minutes at each place, showing with ears of corn and large charts good and bad types of seed corn and will explain how to select, sort and test corn for this spring's planting.—*Chicago Record—Herald*.

THE "UNLOCKING" OF STRAW

By Christian Bues, '06

Reviewed from "Deutsche Landwirtschaftliche Presse," March 23, 1904

Dr. Franz Lehmann of the agricultural experiment station at Goettingen, Germany, reports a simple process to increase the palatability and digestibility of all kinds of straw and chaff. The quintessence of his method is:

"100 parts of straw are mixed with 200 parts of water and 3 to 4 parts of caustic hydrate of soda, and then in a suitable steaming apparatus steamed from 6 to 8 hours under slowly rising pressure; which must reach 6 atmospheres. Besides the splitting of the chemical compounds qualities have been developed in the finished product, which make it agreeable to the taste and smell of cattle, thus increasing the palatability. By this steaming process the digestibility of oat-straw was raised from 38 to 66 per cent, of wheat-chaff from 31 to 69 per cent.

Three pens of sheep containing four head apiece were fed the same grain ration and in addition straw. Two pens received their straw soda treated, the third untreated. Pen 1 consumed 926 g., pen 2, 983 g., while the desires of pen 3 were satisfied with 268 g.

According to Professor Lehmann 1000 g. of treated straw (air dried) and 170 g. of cottonseed meal equal 1400 g. of clover hay in feeding value.

Two steers, fed on an average of 19 Kg. of soda treated straw (damp) with an additional small grain ration, gained about 120.5 Kg. from Oct. 27, to Feb. 18, or about 1.06 Kg. per head per day.

The first cooker built for the purpose furnishes feed for 100 head of full-grown cattle, cooked fresh daily. While this process may not be a paying proposition in the Western United States with its cheap hay, the experiment stations of the East might look closer into the matter.

In Germany the sugar factories manifest a great interest in the process and it might well be worth while to investigate it in view of a possible co-operation with canneries or similar seasonal power establishments.

"Is this a time to be cloudy and sad,
When our mother Nature laughs around,
When even the deep blue heavens look glad,
And gladness breathes from the blossoming ground."

The Cornell Countryman

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MAY, 1904

The Outlook for Agricultural Teaching

We publish in this issue the third of the series of articles on "The Outlook for Agricultural Teaching." It is encouraging to hear these words of good cheer from the Empire State, from old New England and from the old-new South. We have yet to hear from the Middle West where the most phenomenal growth in agricultural education has taken place.

For many years after the passage of the Land-Grant Act, the agricultural colleges failed to reach the people. There was no system of agricultural education and there were no trained instructors. The people were so filled with the land grabbing and land skinning idea, as they scurried on from virgin field to virgin field that they gave little thought to agricultural education. Anyone could farm, for farming meant soil-robbing.

But all this has now changed. Land has so advanced in price or decreased in fertility that it must be well farmed, if it is to pay. To be successful requires not only good business ability, but a knowledge of the applications of science to plant and animal production. If he is to face the future without a handicap, the young farmer requires just as thorough training as does the lawyer.

But the change is not all due to farm

conditions. Many of the first professors of agriculture were either farmers who knew how to raise "bumper" crops, but who knew nothing of agricultural science; or they were scientists who knew nothing of farming. Neither of these men could reach the farmer effectively. The former had little to teach. The latter added the word "book-farmer" to our vocabulary. Gradually the farmer-teacher learned science and the scientist learned practice, until to-day we have a definite system of agricultural education, with teachers whose words carry equal weight with the farmer and with the scientist.

Little progress seemed to have been made till a few years ago, but the foundation was being well laid. The number of students has now begun to nearly double every year. According to careful estimates, over a million farmers attended farmers' institutes last year. From all over the country come reports of successful winter courses with students in such numbers as to embarrass the institutions. Still shorter courses with larger numbers have been common. In one state over 1,000 farmers attended a two week's course. Our own winter course students have recently left to carry new ideas to the farms and creameries of the state. The attendance this winter was 30 per cent above that of last year. The Minnesota School of Agriculture has just closed with an attendance of nearly 500. This is a three year's course that takes students direct from the rural schools and returns over 90 per cent of them to the farms. Several other states have similar schools in connection with their state universities. Alabama has ten agricultural high schools,—one in every

assembly district. Wisconsin recently established two county agricultural high schools. These are so successful that the last legislature made provision for additional ones. These things are but the advance guard of what is to come. Now that the farmer has come to see the value of agricultural education, the only limit to the attendance at these schools is the capacity of the buildings.

**Nature Study
in the
Rural Schools**

Nor is this activity confined to colleges. Nature-study is also getting on a good teaching basis. The mistakes of the days when this was a fad are being rapidly corrected. School gardens are coming to have an actual existence outside of books. Elementary agriculture is securing a place in rural schools and high schools. Several states now require their teachers to pass an examination in nature-study or agricultural subjects or in elementary agriculture. These subjects also appear in several state courses of study. North Carolina, Virginia and Alabama have adopted "Agriculture for Beginners" as a regular text book in the public schools. Louisiana has just adopted the same book with the addition of a chapter on sugar-cane. Georgia also requires elementary agriculture to be taught.

This agricultural teaching or nature-study is not, as some have said, teaching a trade. It is of equal value to the child who leaves the farm and to the one who stays on the farm, for we are all farmers at heart. It will add to those sturdy qualities that so often make the farm boy successful in the city. It will make the one who becomes a farmer a better farmer, and will make his farm home a happy one. It is not to make farmers of

children who should engage in commerce, but it will help to stop the present process in the rural schools of unmaking farmers.

**Reading Matter
for Farmers**

The amount of agricultural information imparted in the nature-study work will be small, but it will arouse interest enough so that the next generation of farmers will read more farm literature.

With such papers as *The Rural New Yorker*, *The Country Gentleman* and *The American Agriculturist*, the papers on poultry, dairying, horticulture, gardening and all the other branches of farming,—with these and the farmers' reading-courses and bulletins any farmer, who employs his long winter evenings in reading and who reads a little during the noon hour, can secure an education.

Every state publishes bulletins that are free to its citizens and that will generally be sent free to residents of other states who apply. Last year there were 373 of these bulletins and annual reports,—more than one for every day in the year. In addition to these there are the many publications of the Department of Agriculture. Many farmers and students do not know the extent and value of these publications or how to secure them. Every student and every rural school should secure the Yearbook, the Farmers' Bulletins, and the bulletins from their state stations, with such other bulletins as apply to their special work. Those who wish publications from the Department of Agriculture should write to the Secretary of Agriculture for the "List of Bulletins for Free Distribution," the "List of Publications for Sale," and should ask to receive the "Monthly List of

Publications." The free bulletins are sent to any address on application. Those that are for sale can usually be secured free from your congressman.

GENERAL AGRICULTURAL NEWS

The \$400,000 beet-sugar factory at Binghamton is to be removed to Idaho. Not enough beets are produced by the farmers about the present location to make the investment of that amount of money profitable. There is one other factory in the state, at Lyons. Sugar-beets have paid many of the farmers well. The manufacturers guarantee a price of five dollars per ton. Fifteen tons, and even more are often harvested from one acre.

* * *

One of the interesting exhibits at the St. Louis Fair will be a six acre map of the United States that is to be worked out with the representative crops of the various regions.

* * *

About 16,000 quarts of certified milk are sold in New York City every day, at from 10 to 18 cents per quart. A few years ago 2,000 quarts supplied the demand.

* * *

The Virginia Legislature has appropriated \$165,000 for an agricultural building and general improvements for the agricultural college.

* * *

September 27 will be apple day at the St. Louis World's Fair. Every person who attends the exposition on that day will receive three or four apples, neatly wrapped, and labeled with the variety name. Only the best varieties, such as Grimes Golden, Jonathan, Maiden Blush and Wealthy will be used. It is estimated that about 1,000,000 apples, or twenty car loads, will be given out.

* * *

The Minnesota School of Agriculture has just graduated a class of ninety, the largest in the history of the school.

The Iowa State Board of Agriculture has provided for a student judging contest at the State Fair of 1904. The winner is to receive a \$200 prize, or a scholarship at the Iowa State College.

* * *

The Texas Agricultural College will have a textile engineering building ready for use in August. The last legislature made provision for the building. It will be a model cotton factory. A two and a four year's course will be given. The former for training cotton spinners, the latter to fit men for the management of cotton factories.

* * *

A few years ago Warren Gammon of Des Moines, Iowa, started to establish a herd of polled Herford cattle. To secure the polled character, a cross was made with a polled breed. This, of course, excluded the offspring from registry in the American Herford Record. There are now about 275 of these cattle having nearly pure Herford blood and the polled character. But the fact that they are not eligible to record is a serious drawback. Therefore, an effort is now being made to start a "double standard" herd. It was found that there were in the United States 14 head of pure Herfords that were naturally polled. Most of these sports were bought and a herd started. There are at present about 20 head, and the polled character is fairly well transmitted. They differ from other pure-blood Herfords in the polled character only. The Wyoming Experiment Station has recently purchased a bull calf that has the greatest number of polled ancestors, three generations on the dam side and two on the sire side. It is interesting to note that Mr. Gammon first got the idea of starting such a herd from reading in Darwin's Origin of Species that variations or sports frequently have the power to perpetuate themselves. A wide correspondence revealed a polled Herford here and there, and by bringing these together the breed is being established.

CORNELL NEWS

CAMPUS NOTES

Before April 4th the Agricultural College had shipped seven winter lambs, ranging in weight from thirty-nine to fifty-eight pounds, at ages from seven to ten weeks, at an average price of eight dollars and seven cents each. They were sent to a New York commission house, and all except one were sold at, or above, the highest quotations. These lambs are kept on a fairly warm barn floor,—no better place than any farmer could prepare. The ewes are given rich milk-producing food for about two months. As sheep are commonly managed, they must supply milk for four or five months to lambs that sell for three and a half or four dollars. Professor Wing says that for New York state farmers, winters lambs are by far the most profitable kind of live stock.

* * *

The Horticultural Department has been testing some of the leading forms of power sprayers during the last few months. The gasoline pump made by the Deming Co., of Salem, O., has been in use along side the compressed air sprayer made by Pierce Loop Co. of northeast Pennsylvania, the wheel geared compressed air sprayer of the Wallace Machinery Co., Champaign, Ill., and the Niagara gas sprayer of Middleport, N. Y. The machines have been used in applying lime and sulphur and kerosene and water as a psylla preventive in the pear orchard.

* * *

Mr. C. C. Poindexter, secretary to Professor Hunt, has been selected as teacher of biology and agricultural chemistry and director of the department of agriculture in the Training School for Teachers at Cheyney, Pa. The school, originally known as the Institute for Colored Youth, was founded in 1837 under the management of the Society of Friends, and up to 1902 was located in Philadelphia. In 1902 the school was reorganized on

an entirely new basis, the object being "to develop a normal school which will correlate academic and industrial education." To this end the school has been removed to Cheyney, twenty-two miles from Philadelphia, and has for its site the old Cheyney homestead which comprises 117 acres of land. Agriculture will be made a prominent feature of the school. Although the farm will be run on a strictly economic basis, the chief end will not be profitable farming, but in conjunction with the stress laid upon nature-study, it will be the aim of this department to so train the student that he will carry into the communities where he teaches, high ideals of rural life. It is hoped that by this means a long-felt want will be supplied in the training of teachers for elementary and secondary schools, by inculcating better ideas of home life, thus bringing school and home into their proper relation of mutual support. The newly organized school will open its doors to students next September, when Mr. Poindexter will assume his duties above named. Mr. Poindexter graduated from the course in agriculture at the Ohio State University in 1903.

* * *

In view of the large number of students taking the poultry work, five different incubator companies have placed their incubators at the disposal of the poultry department. These are: "The Cornell," Chas. A. Cypher's "Model," the "New VanCulin," "Star" and "Sure Hatch." Several others are on the way or are promised. The department now has 11 different kinds of incubators. This gives the students a good chance to observe the merits or demerits of each.

* * *

H. H. Whetzel, A. B., who has acted as assistant pathologist in the extension department, has been advanced to the full position of assistant botanist of the Experiment Station. His appointment will take effect May 1, 1904.

Of the 43 students who took the winter course in agriculture three have accepted positions, all the others returned to their home farms. The 89 students who took the winter dairy course have been very successful in securing positions. There were more demands for men than could be filled. Under "Former Students" we mention some of the positions secured.

* * *

Mr. Hunn has a specially fine crop of forced strawberries this season. Former students will remember growing the Glen Mary and thinking it the finest berry there was for forcing. The crop this year is the President, and Mr. Hunn thinks it equal if not superior to the Glen Mary. The berry is larger, is finer in appearance, and ripens slightly earlier, although there are not quite so many berries on a plant. For the first time the local demand has been for pot plants to use for decoration. If one could take a peep into the forcing house and see the rows of big, rich red berries in contrast to their dark green leaves, he would be convinced that the strawberry is a thing of beauty as well as a joy to the epicure. Not long ago, Mr. Hunn furnished the berries for a dinner where a potted plant was set before each guest so that he could pick his own berries at the table. Here is an opening for someone near the large cities: grow potted strawberries and sell them through the florists. They brought \$2.50 per plant in New York at Easter.

* * *

Agricultural implement manufacturers have this year kindly loaned to the department of agronomy many farm tools. These are being used for instructional purposes. Of grain binders, we have the well known Deering and Osborne machines of the latest pattern, and Wood's New Century, which has given much satisfaction in the handling of heavy crops of grain in the United Kingdom. We also have the Deering horizontal and the Osborne perpendicular corn-harvesters; the Wood, Osborne and Deering mow-

ers; Deering rake, Osborne tedder, and the Deering shredder and husker. Among the planters there is the Curry corn-planter, improved Robbins' potato planter, and a complete line of the "Iron Age" garden tools; eleven types of harrows from Osborne, Buffalo Pitts, Clarke, Henderson, and Nash. The one-horse Osborne, Buffalo Pitts, Planet Jr., "Iron Age" cultivators, and the new sulky cultivator made by the latter firm make an interesting group. Besides the tools enumerated, there are many parts of tools, among which are wagon springs from Mandt, Wis., and twenty two-rod sections of fence from various makers. Making a total of over \$3,000 worth of material. As much more is offered as soon as room can be found for it.

* * *

The department of agricultural chemistry would like to communicate with any of the readers of the COUNTRYMAN who are using or expect to use any of the new, prepared spraying mixtures for insects and fungus troubles. They wish to know what mixtures are on the market that they may test their chemical composition and determine their value.

* * *

Professor Pearson has been appointed a member of the committee on organization for the United States for the International Dairy Federation to be held in Paris, 1905. This convention will be attended by representatives from all dairy countries.

FORMER STUDENTS

Ex '72, John P. Gage is at the head of the Gage Tool Company of Vine-land, N. J.

'90, B. S. A.—W. W. Root has taught in the Chicago Normal Training School, and at the same time has studied in the evening department at the Rush Medical College. Mr. Root received his M. D. degree March 18, '04.

'95, Winter.—Leddra W. Holt is senior member of the firm L. W. Holt and Brother, producers of crude pe-

troleum at Geneva, Indiana. Within the last few years, this vicinity has become one of the busiest spots in the Ohio-Indiana oil field.

'98, B. S. A.—Henry C. McLalien '01, M. S. A., has just accepted a position as assistant in agriculture in the University of Wyoming and Wyoming Experiment Station, Laramie, Wyoming.

'98, B. S. A.—W. A. Stocking is assistant professor of bacteriology at the Connecticut Agricultural College, at Storrs, Conn. At a recent meeting of the Hartford Scientific Society, he delivered an address on "Milk Bacteria, their Relation to Health."

'99, B. S. A.—Henry W. Jeffers is superintendent of the Walker-Gordon Company's farm at Plainsboro, N. J.

'99 Winter.—Geo. B. Lamont is on the farm at Albion.

'99, B. S. A.—Chas. H. Yates writes from 626 Madison Ave., New York City. He is with the Walker-Gordon Laboratory Company.

'00, Winter.—Henry T. Moon is with the Wm. H. Moon Company, proprietors of the Glenwood Nurseries, Morrisville, Pa., with whom he started after leaving Cornell. The statement in our last number was wrong. As Mr. Moon says, it is difficult to gain accurate information about former students. We wish that all our readers would be prompt to correct our mistakes.

'00, Ph.D.—Wilhelm Miller, '92 A. B., University of Michigan, took his doctor's degree in horticulture, was assistant editor of the *Encyclopædia of Horticulture*, and is now editor of *Country Life*. Mrs. Mary Rogers Miller was for some time instructor in nature-study at Cornell. Mr. and Mrs. Miller reside in New York city.

'01, B. S. A.—Arthur G. Ruggles, who is assistant entomologist at the Minnesota Experiment Station is back for a couple of months of graduate work.

'02, Dairy.—Geo. W. Hamilton is living at Oneida, N. Y. Although at present he is not a farmer himself, he maintains a lively interest in agricultural affairs.

'03, M. S. A.—A. C. Beal is instructor in floriculture at the University of Illinois from which institution he graduated in 1897. Mr. Beal has charge of the agricultural greenhouses comprising 8,000 square feet of glass.

'03, Winter—J. R. Bodurtha has gone to Vermont to manage the stock farm of Mr. Henry Holt, of New York. His address is Fairholt, Burlington, Vt.

'03, B. S. A.—Geo. E. Merrill, '02 B. S., N. H. College, left the University in the latter part of his senior year very sick with typhoid fever. He is now on his father's farm at Hampton Falls, N. H.

'03, Special.—F. E. Robertson manages the fifteen-hundred-acre trotting stock farm, for the Empire State Company at New Hudson.

'03, Dairy.—A. F. A. Schlotzhauer, who took the dairy course in '03 and was assistant in butter making and dairy mechanics in the '04 dairy course, was married Mar. 21, to Miss Alice Mae Brigham of Athens, Pa. The couple are living at Briarcliff Manor, N. Y. Mr. Schlotzhauer is foreman of the Briarcliff Farm's dairy, the milk from which retails at 12 cents a quart in New York City.

WINTER DAIRY CLASS OF 1904

Of this winter's dairy students the following have already sent in notice of their address and employment:

In Charge of Creamery

Leon S. Apgar, assistant manager, St. Albburgh, Vt.

Winfield E. Ayers, Berne, Schoharie Co.

Harvey L. Ayers, Huntersland, Schoharie Co.

S. M. Becker, N. Cohocton, Steuben Co., is operating a creamery which he has just built. His son, A. M. Becker, who also took the dairy course this winter is helping him. They expect to use hand separator cream collected from a wide area.

Lester A. Culver, assistant in creamery, Meridale, Delaware Co.

Wilson H. Darrow, Peru, Clinton Co.

Mervyn C. Doud, Louisville, St. Lawrence Co.

Grover C. Eaton, Marathon, Cortland Co.

Justus C. Farley, assistant in creamery, Candor, Tioga Co.

Fred W. Ferris, East Aurora.

Frank M. Fowler, Youngsville, Sullivan Co.

P. B. Hess, Roxbury, Delaware Co.

Wm. J. O'Neil, Jordan.

Murray L. Peryer, Irona.

John E. Pollock, assistant to John Smith, '97 Dairy Certificate, Leroy.

Edson E. Potter, Ellenburg Center.

H. E. Richardson, manager of creameries for Richardson, Bebee & Co., E. Aurora, Erie.

H. N. Roberts, Mayville, Chautauqua.

Peter D. Roseboom, York, Livingston Co.

Delmer S. Rowe, Avon.

Harvey L. Seeley, operating a creamery which he has built at Lakeville, Livingston Co.

A. J. Snyder, East Springfield, Otsego Co.

Chas. H. Snyder, Downsville.

H. R. VanNortwick, assistant in creamery, Corning, Steuben Co.

Maskell Ware, inspector of creameries, Meridale, Delaware Co.

L. D. Waterman, Willink.

Geo. M. Whyte, assistant in creamery, Moravia, Cayuga Co.

Richard Winslow, Ticonderoga, Essex Co.

In Charge of Cheese Factories

R. E. Barden.

Guy W. Bouman, Alder Creek, Oneida Co.

Erwin G. Davis, Adams Center, Jefferson Co.

E. V. Gardinier, East Springfield, Otsego Co.

Fred Hevener, Glosser.

Benj. F. Killough.

W. H. McMillan, Upper Lisle.

Harvey R. Page, Canajoharie, Montgomery Co.

C. D. Thornton, Tully.

A. E. Thurgood, assistant in cheese factory, Bombay.

Peter S. Utridge, Cadotte, Wisconsin.

In Market Milk Plants

J. W. Campbell, Trenton, N. J.

Pierce D. Egan, New Britain, Conn.

R. F. Ford, Montgomery, Orange Co.

John J. Klein, New Britain, Conn.

Wm. A. Nydam, 239 Broadway, Newburg, Orange Co.

On Home Farm

Henry K. Jarvis, Fly Creek, Otsego Co.

W. L. Markham, Kennedy, Chautauqua Co.

Raymond Tompkins, Ashland, Greene Co.

Otherwise Employed

Joseph H. Bliss is in charge of a private dairy at Derby.

David C. Clegg is chief milk inspector of the city of Philadelphia.

O. Earl Hinckley is a traveling salesman for P. M. Sharples Separator Co., with headquarters at West Chester, Pa.

Amos L. Kenyon is instructor in the Rhode Island Agricultural College.

Geo. Manchester is foreman of an estate at Oneonta, Otsego Co.

M. J. Murray is in the Geneva Experiment Station.

Maurice A. Newton was married March 2nd, to Miss Carrie Mildred Perine at Lysander, N. Y. Mr. Newton has accepted a position as assistant in the department of dairy husbandry at Cornell.

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Partridge for 5 years, (Now 5 pens)

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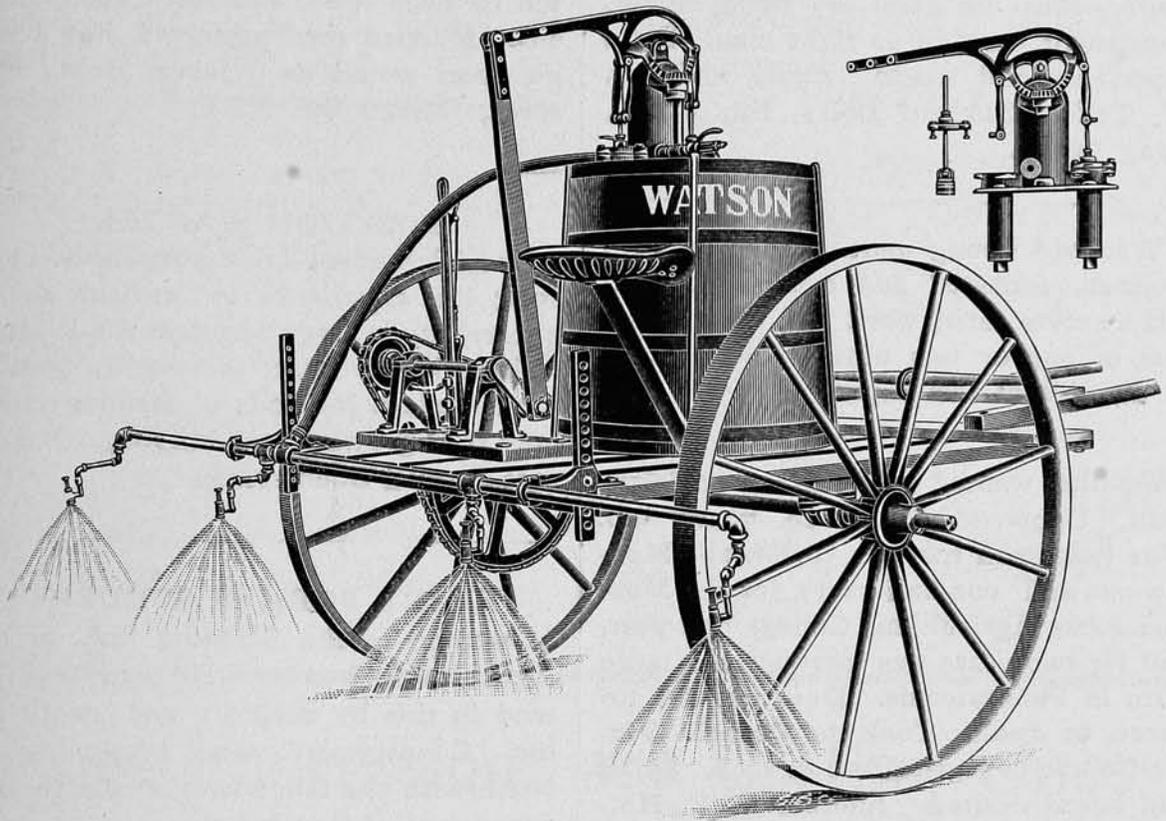
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Entirely Automatic, with Agitator and Brushes, which
Stirs the Liquid and Keeps the Suction Strainer Clean

Wheels and Nozzles Adjustable for rows 2 1-2 to 3 feet apart



Fitted with thills for one horse ; tank holds sixty gallons.

Platform is skeleton form as shown, made from hardwood strips five inches wide and four inches apart.

Double cylinder pump, each cylinder $2\frac{1}{2} \times 8$ inches, separate suction pipes and all working parts are made of brass. No leather valves.

The best automatic mechanical agitator fitted with automatic brushes to keep suction strainers clean insuring a steady and continuous supply, in through solution, and without clogging.

Wheels 50 inches in diameter, adjustable on the axle for rows planted $2\frac{1}{2}$ to 3 feet apart ; 3-inch tire Axle 1 7-16 inch turned steel ; 3 babbitted boxes, one at the center of the axle to prevent springing.

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Four improved single Vermorel nozzles, adjustable to spray potatoes planted in rows two and one half to three feet apart, also a vertical adjustment of pipes and nozzles to allow a privilege of twelve inches up or down : extreme height forty inches from the ground.

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This machine can be furnished with pole for two horses and with long evener and long neck yoke also with 100-gallon tank at additional cost. It can also be furnished with one or two leads of hose for orchard spraying.

We have a WATSON 4-row Potato Sprayer of your manufacture and like it very much.

EASTERLING BROS., Martin, Fla., Jan. 10, '04.

Our WATSON 4-row Potato Sprayer works beautifully and we are much pleased with it.

C. B. WOOLEY, Arcade, N. Y., Aug. 13, '03.

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BURT OLNEY CANNING CO., Oneida, N. Y., July 10, '03.

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Position wanted as herdsman or dairyman. Unmarried man 29 years old. Was herdsman for Ex-Governor Morton one and one-half years, for the Massachusetts Agricultural College one year, and for two years was foreman of a large farm in Pennsylvania. Does not use tobacco, or drink. Took the Cornell Winter Course in Agriculture in 1904. \$40.00 and board desired. Address C. E. Holloway, Meredith, Delaware Co., N. Y.

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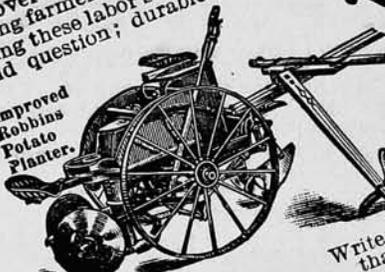
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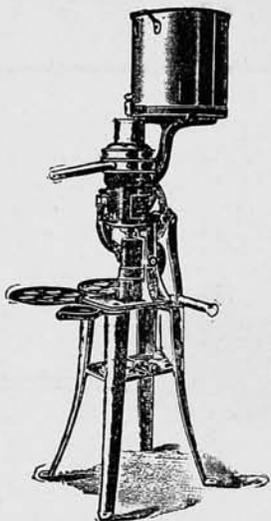
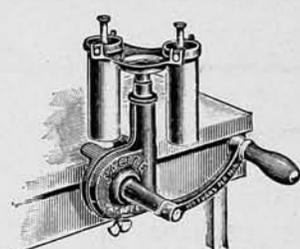
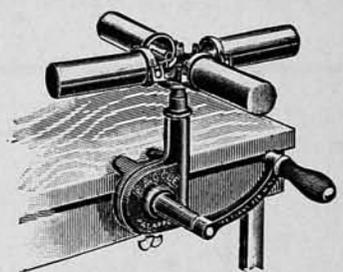
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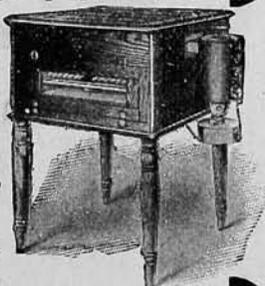
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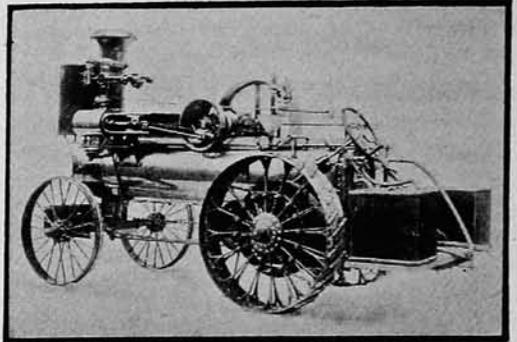
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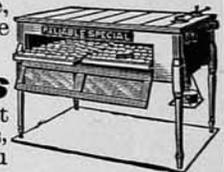
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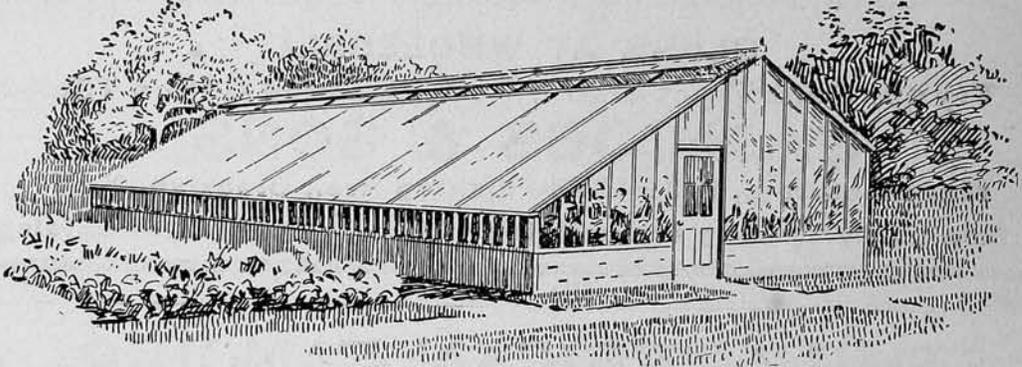
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At the Great Annual Show of France, held at Evreux, June, 1903, our stallions won First, Second, Third and Fourth prizes in every Percheron stallion class; also won First as best collection.

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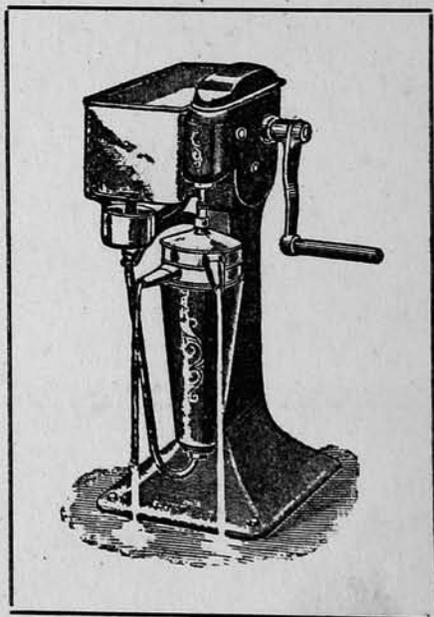
Look Deep

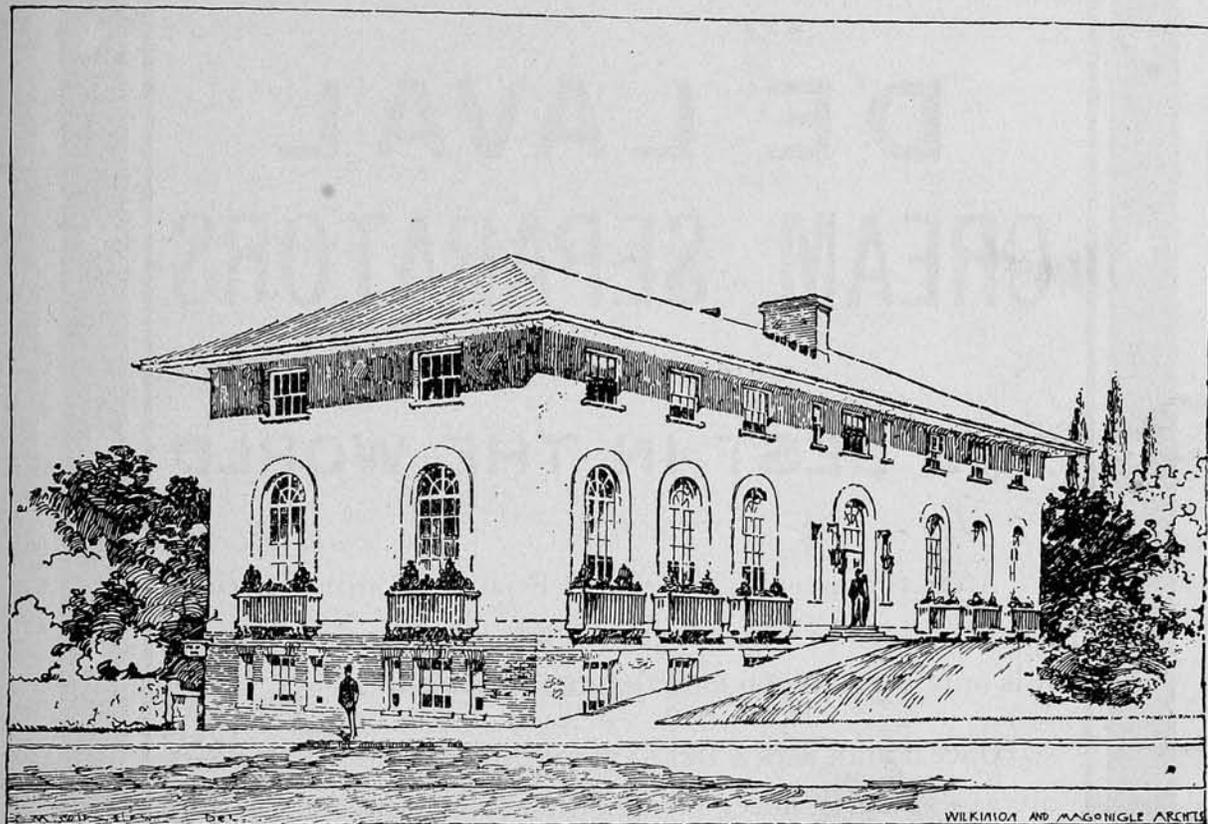
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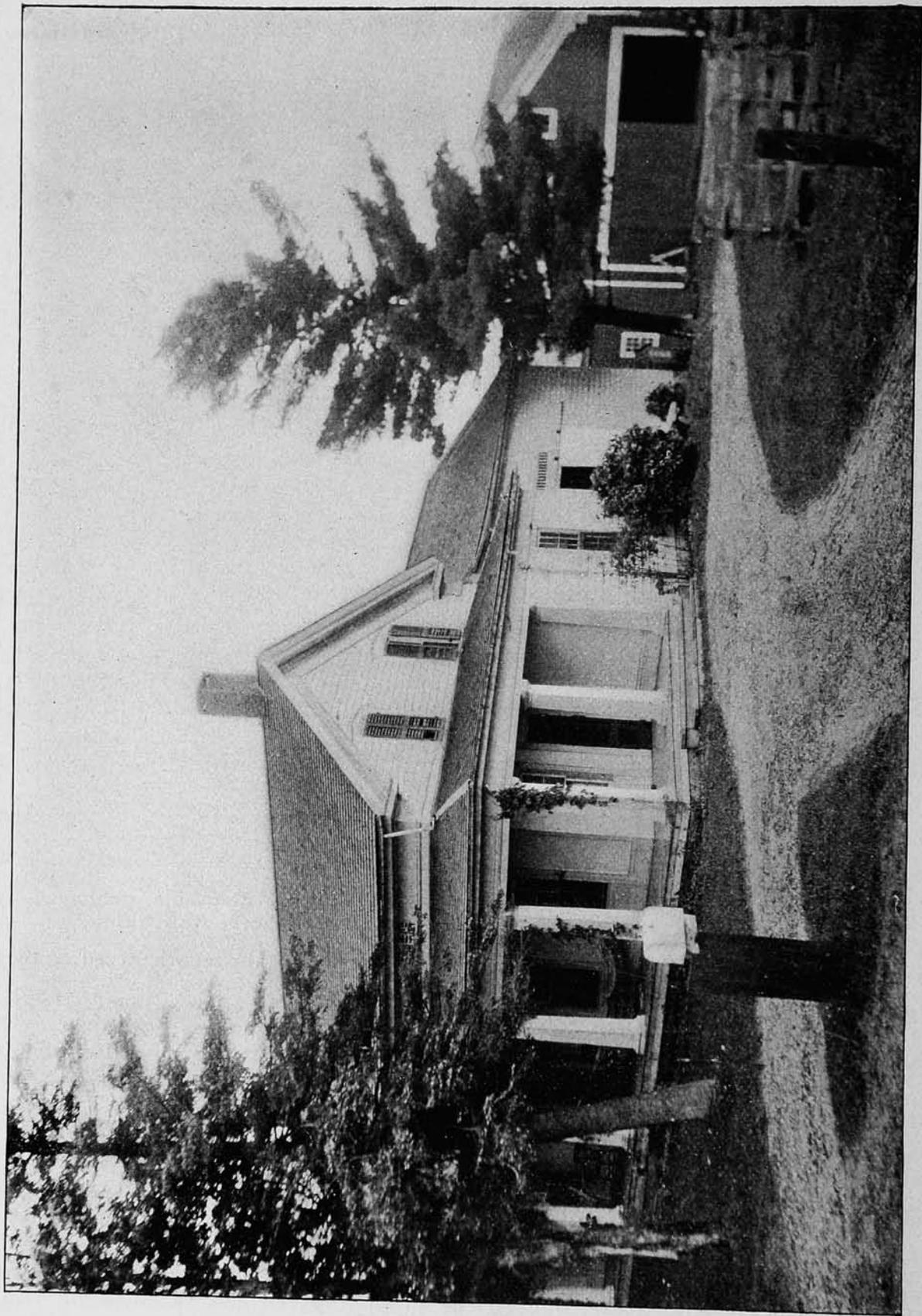
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A TYPE OF THE OLDER STYLE OF DIGNIFIED FARM BUILDINGS. (SEE PAGE 212.)
The Home of H. M. Knox, a Graduate of the College of Agriculture, who has Returned to the Farm.

THE CORNELL COUNTRYMAN

Vol. I

JUNE, 1904

No. 7

WHAT IS AGRICULTURAL EDUCATION?

By L. H. Bailey

THERE has been great progress in agricultural education within the past few years. Methods are crystalizing and at the same time the field is enlarging. We once thought of agricultural education as wholly special or professional, but we now conceive of it as an integral part of general and fundamental educational policy. As a college or university subject it is necessarily technical and professional; but this college work must articulate with the common-school work, as language and science now articulate with the schools. That is, agricultural subjects are now to be considered as a part of primary and secondary school work, leading naturally to special work in the same subjects for those who desire technical training. In the schools the subjects are to be treated non-professionally, as primary means of educating the child. The reason for using these subjects as means of educating lies in the principle that the child should be educated in terms of its own life rather than wholly in subjects that are foreign to its own horizon and experience. It is most surprising that, while the theory of education is that the person shall be trained into efficiency, we nevertheless have employed subjects that have little relation to the individual child's effectiveness.

Not long since my father showed me a letter that he received from a school girl in 1851. It read as follows: "I seat myself expressly for the purpose to finish this letter which has been long begun. I go to school room to Mr. Wells and study parsing mental Philosophy grammar and penciling." This sounds as if it came from "The Complete Letter-Writer."

This little girl lived on a farm. She lives on a farm to this day. Her parents and grandparents lived on a farm. The family had no expectation of living elsewhere than on a farm. Yet, in her entire school life I presume there was not a single hour devoted to any subject directly connected with the farm or with the country. If her studies touched life in any way that she could comprehend, it was probably in habits of thought of the city and of the academician rather than in anything that appealed to her as related to the life she was to lead. It is small wonder that the farm has been devoid of ideals, and that the tendency has been to leave it. The direction of the stream determines the course of the river.

The future course of education will develop many means of training the child mind. Heretofore these means have been few and the result has been narrow. We shall see agricultural, commercial, social subjects put into pedagogic form and be made the agencies whereby minds are drawn out. These will be at least as efficient as the methods that we happen thus far to have employed. How much of one or how much of another, is a detail that must be left to the future. Nor does it follow that the old-time subjects are to pass away. They will be an important part of the system but not the whole system. These new subjects are now coming into the schools as rapidly, perhaps, as they can be assimilated. It is a general feeling that our schools already are overcrowded with subjects; and this may be true. The trouble is that while we are introducing new ideas as to subjects

we are still holding to old ideas as to curriculums and courses of study. We will break up our schools into different kinds; we will employ more teachers; we will not endeavor to train all children alike; we will find that we can secure equal results from many kinds of training; we will consider the effect on the pupil to be of much greater importance than the developing of the particular subject that he pursues; there are many men of many minds; some system will be developed whereby individual capabilities will be developed to the full; the means will be related to the pupil: one of the factors will be subjects making up the environment of the pupil that lives in the country.

My plea, therefore, is that agricultural and country-life subjects become the means of educating some of the pupils of at least some of the schools. To be sure, we have already introduced "natural science" into many of the schools, but, for the most part, this has worked down from the college and necessarily it usually stops at the high school. We need something much more vital for the secondary schools than science as commonly taught. The great nature-study movement is an expression, as yet imperfect, of the feeling that there should be some living connection between the school-life and the real life.

A college of agriculture, therefore, is as much interested in the common schools as a college of arts and sciences is. It should be a part of a system, however informal that system may be, not an establishment isolated from other educational agencies. But even as a college, it will reach more persons than it has ever reached in the past. In any self sustaining commonwealth, it is probable that one-third of the people must be intimately associated with the soil. These people need to be as well trained as those who follow the mechanic trades or the professions. It is immensely difficult to put these agricultural subjects into teachable form and to reach the agricultural people in a way that will mean much to them,

because agriculture is a compound of many wonderfully diverse trades in every conceivable kind of natural conditions. Nor can one institution in each large state or province hope eventually to reach all these people, any more than one institution can reach all those who would best be taught in terms of books. But there must be at least one institution that is well equipped for the very highest kind of effort in these fields; Congress long ago recognized this fact in the establishment of the land-grant colleges, and all persons who are informed on agricultural education also now recognize it. The agricultural colleges have been handicapped from the first for lack of funds. It is now coming to be recognized that the highest kind of effort in these colleges cannot be sustained on a farm that pays for itself nor by means that are copied from the customary college work in "humanities" and "science." If it is to be efficient, agricultural education of a university grade is probably more expensive to equip and maintain than any other kind of education.

Once it was thought that the agricultural college should be wholly separate from any "classical" institution. The oldest of the existing American agricultural colleges, the Michigan institution, is established on this principle. So are the Massachusetts, Iowa and Pennsylvania colleges and a number of others. It is natural that this should have been the feeling in the original movement for the establishment of these colleges, for the movement was itself a protest and revolt from the existing education. Time, however, has put agricultural subjects on an equal pedagogical plane with other subjects, and there is no more reason why the agriculture should be segregated by itself than that the architecture or law or fine arts should be. The agricultural colleges connected with universities are now beginning to grow rapidly. This is illustrated in the great development of the agricultural colleges at the Universities of Illinois, Wisconsin,

Minnesota, Nebraska, Missouri, Ohio, and elsewhere. It was once thought that the agricultural student would be "looked down upon" in a university or in a college with other departments. This was once true. It was true once, also, of the student in natural science and mechanic arts. Pioneers are always marked men. The only way to place agricultural students on an equality with other students is to place them on an equality.

These remarks are made in no disparagement of the separate agricultural colleges, but only to illustrate the character of the growth of agricultural education. No doubt the separate colleges blazed the way. They stand for an idea that we would not like to dispense with. Every State and Territory has one college founded on the land-grant, and in the Southern states there are two, one for the whites and one for the blacks; in nearly half of the states these colleges are separate institutions. But the fact remains that the college connected with the university is to have the broader field in the future. Its very connection dignifies it and gives it parity. It draws on many resources that the separate college knows not of, unless, indeed, the separate college develops these resources for itself. The tendency, therefore, is for every ambitious separate college to develop the accessory resources, in the way of equipment in general science, literature, the arts; for agricultural education is constantly coming to be of a higher grade. The separate agricultural and mechanical colleges are rapidly becoming essentially industrial universities, giving general training but with the emphasis on the technical subjects.

It is strange how far this principle of education by isolation has been carried in the development of the agricultural colleges. Not only have the colleges been separated from other educational enterprises, but in many cases they have been planted far in the open country, partly on the theory that the farm boy, of all others, should be removed from temptation and from the

allurements of other occupations. It was the early theory, also, that the agricultural student must be compelled to do manual labor in order that he be put in sympathy with it and that his attention be isolated from tendencies that might divert him from farming. These methods seem to have rested on the general theory that if you would make a man a farmer you must deprive him of everything but farming. It would be interesting to try to estimate how much this general attitude on the part of the agricultural colleges was itself responsible for the very inferiority of position that the agricultural student was supposed to occupy. This attitude tended to maintain a traditional class distinction or even to create such a distinction. Agricultural education must be adapted to its ends; but it must also be able to stand alone in competition with all other education, without artificial props. It is no longer necessary that the agricultural student wear blinders.

On the other hand, the farm point of view must be kept constantly before the student, as the engineering point of view is kept before the student in a college of civil engineering; but we are coming to a new way of accomplishing this. Mere teaching of the sciences that underlie agricultural practice will not accomplish it; nor, on the other hand, will drill in mere farm practice accomplish it. It is not the purpose of an agricultural college to make men farmers, but to educate farmers. We are not to limit the student's vision to any one occupation, but to make one occupation more meaningful and attractive than it has ever been before. From the farmer's point of view, a leading difficulty with the college course is that it sometimes tends to slacken a man's business energy. One cannot at the same time pursue college studies and commercial business; and yet farming is a business. In a four-year's course, some students are likely to incur certain habits of ease that are difficult to overcome upon their return to the farm. How much this is a fault of

the courses of instruction and how much a personal equation of the student, is always to be considered. But if this is a fault of college work, it is generic, and not peculiar to colleges of agriculture. Experience has now shown that a compulsory labor system is no preventive of this tendency, at least not with students of college and university age. Student labor is now a laboratory effort, comparative with laboratory work in medicine or mechanic arts. The mature student must have some other reason for laboring than merely a rule that labor is required. However, it is largely an unsolved problem with the agricultural colleges as to just how the stirring business side of farming can be sufficiently correlated with courses of study to keep the student in touch and sympathy with affairs. With the passing of compulsory student labor there has no doubt been a reaction in the direction of too little utilization of the college farm in schemes of education; but we shall now get back to the farm again, and this time on a true educational basis.

Nothing is more significant of the development of the agricultural colleges than the recent splitting up of the professorships. From agricultural chemistry as a beginning, in one form or another, there have issued a dozen chairs, first one subject and then another being separated as a teachable and administrative entity. Even the word "agriculture" is now being dropped from the professorships, for this is a term for a multitude of enterprises, not for a concrete subject. Horticulture was one of the first protuberances to be lopped off; and even this must very soon be divided into its component parts, for there is little relationship between the effort that grows apples and that grows orchids or between the market garden and landscape gardening. Even the chair of agronomy, the newest department of the colleges, must soon be separated into its units. Forty years ago mechanic arts was undivided. Who then would have prophesied such professorships as

experimental engineering, electrical engineering, marine engineering, railroad engineering, naval architecture, machine design? The progress of the dividing up of the mechanic arts and civil engineering marks the rate of our progress, in the terms of the land-grant act, "to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." In similar spirit, agriculture is divided into its teachable units. The lists of divisions of the teaching force or curriculum in the larger agricultural colleges illustrate this admirably. In Illinois, for example, the titles of professors and instructors are associated with such divisions as thremmatology, agronomy, pomology, olericulture, floriculture, soil physics, dairy husbandry, dairy manufacture, horses, beef cattle, swine husbandry, farm crops. At Cornell the co-ordinate departments of instruction in the College of Agriculture are classified as agricultural chemistry, economic entomology, soils, agronomy, horticulture, animal husbandry with its sub-department of poultry husbandry, dairy industry, agricultural engineering and architecture, the farm home, rural economy and sociology, rural art (including landscape gardening), nature-study for teachers, besides miscellaneous courses,—making altogether thirteen divisions. The courses now offered in the Cornell College of Agriculture, not including the winter-courses, are 76, of which 71 are to be given in the next academic year. Nearly all these courses comprise a half-year's work.

While all this subdividing represents progress, there are disadvantages attending it because it tends to give a partial view of the subject. The larger number of farmers must engage in general "mixed husbandry" rather than in specialties. Farming is a philosophy, not a mere process. The tendency of the inevitable subdividing of the subjects is to force the special view rather than the general view, as if, in medicine, students were to become specialists rather than gen-

eral practitioners. The farm-philosophy idea was represented by the older teachers of agriculture. Of these men, Professor Roberts is a typical example, and his work in making students to be successful, all-around farmers is not yet sufficiently appreciated. Much of this farm philosophy is now coming into the courses of instruction under the titles of rural economy, rural economics, rural sociology and the like. I have sometimes thought that the time may come when we will again have professors of "agriculture" who will co-ordinate and synthesize the work of the agronomist, soil physicist, chemist, dairyman and others. However, the segregation has not yet worked any harm, and perhaps my fears are ungrounded; and it is certain that with increasing knowledge and specialization, the courses of instruction must still further divide.

Another most significant development in agricultural education is the change in attitude towards the college farm. Once it was thought that the college estate should be run as a "model farm." However, a farm that sets a pattern to the farmer must be conducted on a commercial basis; yet it is manifest that it is the province of a college to devote itself to education, not primarily to business. A farm cannot be a "model" for all the kinds of farming of the commonwealth; and if it does not represent fairly completely the agriculture of the state, it misses its value as a pattern. At all events, the pattern-farm idea is practically given up. It is then a question whether the farm shall be used merely to "illustrate"—to display kinds of tools, examples of fences and fields, breeds of stock. This conception of the college farm is equivalent to the old idea of "experiments" in agricultural chemistry: the teacher performed the experiments for the students to see. The prevailing idea of the college farm is now (or at least, I think, soon must be) that it shall be used as a true laboratory, as the student in chemistry now works

first-hand with his materials instead alone of receiving lectures and committing books. Is a student studying cattle? The herds are his for measurements, testing as to efficiency, studying in respect to heredity, their response to feeding, their adaptability to specific purposes, and a hundred other problems. Cattle are as much laboratory material for the agricultural student as rocks are for the geological student or plants for the botanical student. Technical books were once kept only in libraries; now they are kept also in laboratories and are laboratory equipment. College museums were once only for display: now they are also for actual use by the student. Barns are laboratories, to be as much a part of the equipment of a college of agriculture as shops are of mechanic arts. They should be in close connection with the main buildings, not removed to some remote part of the premises. Modern ideas of cleanliness and sanitation are bound to revolutionize the construction and care of barns. There is no reason why these buildings should be offensive. It was once thought that dissecting rooms and hospitals should be removed from proximity to other buildings; but we have now worked these laboratories integrally into the plans of colleges. Time has now come for a closer assembling of the college barns with the college classrooms. Likewise, the entire farm is no doubt to be used in the future as a laboratory, at least in the institutions of university grade,—except such part as is used for pure investigation and research. Where, then, shall the student go to see his model farm? To these farms themselves; here a stock farm; there a fruit farm; elsewhere a dairy farm. The shops in the colleges of mechanic arts have long since come to be true laboratories; they do not engage in railroading or manufacturing. They do not try to "pay their way"; if they do pay their way, this fact is only an incidental or secondary consideration. A college of agriculture is

a teaching institution: it must have equipment and laboratories.

I cannot close this sketch without calling attention to the fact that the college of agriculture has obligations to the farmers of its commonwealth. The very fact that every college of agriculture in North America is supported by public funds imposes this obligation. Moreover, the colleges of agriculture and mechanic arts stand for true democratic effort, for they have a definite constituency that they are called upon to aid. It is desirable that as many persons as possible shall assemble at the college itself, but those who cannot go to college still have the right to ask for help. This is particu-

larly true in agriculture, in which the interests are widely separated and incapable of being combined and syndicated. Thereupon has arisen the great "extension" movement that, in one way or another, is now a part of the work of every agricultural college. Education was once exclusive: it is now in spirit inclusive. The agencies that have brought about this change of attitude are those associated with so-called industrial education, growing chiefly out of the forces set in motion by the land-grant act of 1862. This land-grant is the Magna Charta of education: from it in this country we shall date our liberties.

THE FARMER'S VIEW OF AGRICULTURAL EDUCATION

By H. E. Cook

President of the New York State Dairyman's Association

AGRICULTURAL education for the masses is in a formative period. Mistakes must be made until its age makes for it a definite scheme that shall be subject only to changes necessary to meet new conditions. The traditions which the present generation inherited are not all forgotten. The book education of the class-room and the subsequent train of evils when application was attempted are fresh in the minds of many farmers, and these men will only give the plan a hearty endorsement when boys come from school and make their applied knowledge of such use that they outrun those who remain at home, when thrown upon their own resources.

One extreme usually follows another. Primitive agriculture was wrought out by heavy muscular effort. No one today cares to defend the old practice. There comes a query, however, whether or not we have held out to young men a somewhat overdrawn picture of the wonders of soil, plant and animal investigation, and whether we keep before them the fact that farm and dairy life is full of hard work, long days, and many objectionable odd jobs, that are

after all, the very nucleus of success. Do not understand that there are not many avenues for effective improvement which the trained young men will aid in solving, but there is a great weight and a long leverage against them, fixed by tradition, by custom and often by the eternal fitness of things. The college student has ideals taught him. That is right; but what he would do, and what he can do, may be far apart. It is at such times that the stuff a man is made of shows itself. And again the success attending any man will depend upon his ability to stand up under hard work. This may not be alone physical or mental, but a combination which is perhaps the farmer's condition as found today. The educated boy is one who knows how to do things. I know farmers who never had training, but are natural mechanics. They quickly find a way out, and, really, the farmer seldom finds a proposition twice alike.

Boys fresh from college must respect the judgement of experienced farmers. Although their point of view may be wrong when judged as a whole, they are sure to have stock in trade that these young men need.

Farm economics are of all things difficult to teach. With the information at hand today, were it not for the problem of living and meeting the losses and running expenses, our lands would produce enormous crops and our herds give large returns. I feel safe in saying that we are more in need of application of present knowledge than the acquisition of more. If the point of view can be made clear the application would often be forthcoming.

Agricultural education is not more or less than the training for law, medicine or any of the so-called professions. It provides for a strong, safe foundation upon which the experience and contact of actual farm operations, unaided by school facilities or state appropriation, may build a superstructure far, may be, from the ideal of school days, yet showing the results of an individual accomplishment, which should be the natural ambition of every human being.

From the farmer's standpoint there is still much prejudice against the college trained man—first, because he views him from the old method of training. The new has not yet in the East had an opportunity to prove its value to him. I think farmers as a class seldom anticipate and theorize. While they are constantly experimenting, it is done in spite of, rather than through their premeditation, and so they look askance at any proposition

not laid down in the traditions of their forefathers or printed in their own collection of recipes.

I am not writing in a spirit of criticism of methods but rather to suggest. I am not contending that present methods are ideal or are even what they should be; but rather to urge upon those who look forward to that high ideal of farm living with its independent attitude towards the world, where the grass is always green and the sleek herds with full udders dot the hill side or stand peaceably in their modern stables with warmth, light and ventilation for their comfort, where the happy farmer and his family enjoy the shade of noonday and the cool breezes of a lingering twilight,—to revise their estimate and parallel these poetic fancies with short nights in June, with backache and stiff, sore joints, the result of the accomplishment of an ambition, which, in homely parlance, was to do the work of two days in one.

Facing drouth, excessive rain, low temperatures, animal diseases and low prices destroys the fondest hopes. These things and more the farmer's long experience has ground into the fiber of his being until he fails to see the real merit of the point of view secured by the college training.

Time alone will destroy this prejudice on the part of the farmer as it will also more fully adapt the training to the needs of the farm.

MY GARDEN

My garden is a lovesome thing, God wot!
 Rose plot,
 Fringed pool,
 Ferned grot—
 The veriest school
 Of peace; and yet the fool
 Contends that God is not—
 Not God! In gardens! when the eve is cool,
 Nay, but I have a sign:
 'Tis very sure God walks in mine!

Thomas Edward Brown.

THE OUTLOOK FOR THE EDUCATED FARMER

By Eugene Davenport

Dean of the College of Agriculture of the University of Illinois

I AM asked to write for the Countryman my opinions on the outlook for the educated farmer. I will clear the ground and narrow the subject at once by expressing my conviction that there will shortly be very little outlook for any other than an educated farmer.

All the world is studying agriculture, at least all of the civilized world, and America is no exception. All the powers of scientific knowledge and method are being exerted for the purpose of learning the secrets of nature and of making the business of food production more certain and more successful. All of this means that we are making the business of farming more difficult, which is only another way of saying that it is generally becoming less and less suited to the capacity of the densely ignorant or the grossly incompetent.

Under pioneer conditions the object in agriculture was simply one of maintenance. The problem then, even though strenuous, was yet a simple one. To sow, to bestow a minimum of cultivation and to harvest, all without regard to either the economy of production or its effects upon fertility—this indeed was simple farming. The only question at the end of the year was whether enough had been produced to last the family and their animals until another year.

Now the object of farming is not primarily to make a living, but it is to make money. To this end it is to be conducted upon the same business basis as any other producing industry. No matter what the yield, it must have been produced at a profit or the farmer is not making money; again, no matter what the profits the fertility of the land must not be allowed to run down or the capital stock will depreciate and the business will evaporate and come to naught even under conditions of apparent success. To steer clear of rocks in any producing enterprise calls for expert training and agriculture is no excep-

tion to the general rule. It has taken its full place among the learned professions.

The young man who is well trained in agriculture has a variety of openings toward which he may look. First of all, if he or his family owns land the best of all opportunities lies in undertaking its management. This will open to the young man all the possibilities of a successful business and the privileges of a useful citizenship. Young men sometimes feel that their talents are in danger of being buried on a farm. Not at all. There is no place where the young man's real worth and ability will be so certainly recognized and so quickly rewarded as in a country community.

Second, he may undertake the management of lands owned by others, generally for a salary and often also for a share in the profits in addition.

Third, he may become manager for the country place of some land-loving business man of the city. This is an opening especially common in the East and in close proximity to large cities, generally.

Fourth, he may fit himself for service in the agricultural college and experiment station work. He will not secure as much money in this way as in commercial lines, but the work is of high order and the associations are ideal. As to salary, it may be said, however, that the amounts paid to workers in agriculture are often higher than those paid in other lines in the same institutions. This is partly from lack of supply and partly because these positions demand not only good training but also a high development of judgement and executive power.

Fifth, and it is no last resort by any means, the well trained agriculturist may rent lands at ordinary rates and expect to do well. He should secure a long time privilege, if possible, and it will not be difficult to do this if he really knows his business.

Agriculture is such a combination of elements—scientific, economic and executive,—that it is by its very nature a difficult business. It needs not only good training, but native ability to

form correct judgements and to make safe decisions. That a man so endowed may confidently hope for success in agriculture, I feel abundantly assured.

FARM NEWS IN DAILY PAPERS

By Clinton M. Schultz.

Editor Daily Agricultural Department, Chicago Record-Herald

THE *Chicago Record-Herald* was the first paper in the United States to establish a department of daily farm news. This feature was commenced the latter part of August, 1903, and its success was instantaneous. From two to four columns daily are given to this news. It is collected from every part of the country by wire and mail in the same way that all other news is gathered. Reports of agricultural societies, farmers' institutes, notable sales of live stock, and all news of every character relating to the farmer and his business is reported as promptly and carefully as any other news which appears in the paper. This class of news has never before been given attention by daily newspapers. In addition to current news, articles by practical farmers, stock breeders, fruit growers and teachers in the agricultural colleges on matters of general interest to the farmer, are published. These articles are all reduced to plain terms which are easily understood, and no attempt is made to give prominence to scientific articles which are of small value to the average farmer. The constant aim of this department is to keep close to the grass roots, and not soar above the heads of its readers.

The wonderful impetus given to scientific farming by the efforts of the government department of agriculture through the experiment stations and agricultural colleges of the states during the past few years is very great and has aroused a greater interest in agriculture than has ever been known before. The up-to-now farmer whose boys are educated in the agricultural colleges and farmers' institutes demands that the news of his industry shall be fresh, reliable and interesting, and more—that it shall be served to him daily as other news of similar im-

portance. The rural free delivery mail service that is rapidly reaching out to every farm house in the country gives the daily newspapers the opportunity of supplying this news to the farming communities as quickly as any other kind of news that is served to city subscribers.

The rapidly growing importance of farming as a business, must be recognized by the daily newspapers everywhere. Since the *Chicago Record Herald* inaugurated its department of daily farm news, other leading dailies in the great Middle West have been quick to see its advantage, and are now giving more attention to daily agricultural information than ever before. Many of them print this news daily and it will not be very long before every daily newspaper whose constituency is largely made up of farmers, will be compelled to print daily farm news, in order to satisfy their demands.

The daily papers that have taken up this feature of printing farm news every day have found it to be the most powerful influence for obtaining and holding circulation in the rural communities that has ever been tried. Since the establishment of the rural mail delivery, many daily newspapers in the agricultural sections have increased their country circulation enormously, the percentage of this class of circulation in many cases running as high as 45 per cent of the total. Newspapers everywhere recognize this new, rich field, and are rapidly reaching out for it. They cannot expect to obtain or hold this class of circulation without giving the people in the rural communities the news and general information in regard to their business which they have a right to demand. The daily farm news feature in the newspapers has come to stay.

THE GRANGE AS A FACTOR IN AGRICULTURAL EDUCATION

By *E. B. Norris*

Master of the New York State Grange

THE Order of Patrons of Husbandry is recognized as the greatest agricultural organization. It furnishes the farmer the opportunity to broaden and enlighten his mind and improve his social position. During the 36 years since it was founded it has met and overcome many difficulties. Its increasing influence and popularity demonstrate beyond question that farmers can and will maintain an agricultural organization. The Order has brought sunshine and happiness into many hitherto isolated farm homes. It is one of the potent factors in elevating the social, fraternal and educational condition of the American farmer. The wonderful growth and increasing influence of the Grange is due to the high character of its membership and its consistent and conservative course in standing above sectional, sectarian or partisan bias. The ultimate object of the Order of Patrons of Husbandry is for mutual instruction and protection; to lighten the labors of the farmer by diffusing a more thorough knowledge of the hidden resources of the soil; to expand the mind and exemplify the beautiful laws the great Creator has established in the universe.

Unity of action cannot be acquired without discipline and discipline can only be brought to its highest perfection by organization. This suggestion implies thought, study and work, and its remuneration will be the broadening of the mind for the better discharge of the duties of the farm home and of citizenship. Farmers will soon recognize the fact that success on the farm does not imply physical labor alone; it comes from well directed and thoughtful conception coupled with intelligent action. This is an age of development, and to advance with the progress that is being made in the industrial and commercial world education and mental activity must predom-

inate, and agriculture can be no exception to the rule. The Grange should be active and aggressive to improve the farmer's condition.

The causes that have contributed to the depression of agricultural pursuits for the past decade are attributable to the fact that they have not been fostered by as effective organization as have the industrial and commercial interests. This is partly due to the farmers themselves for not being thoroughly organized. The Grange offers the needed opportunity. The church, the school and the press recognize that the Order promotes the welfare of the basic industry of our country and insures general prosperity in all legitimate enterprises and therefore concede the claim of the Grange to advance the material interests of agriculture and promote a higher order of citizenship. Rural life today means more than it did a generation ago. Free rural mail, the electric trolley and farm telephone, the consolidated school system and the desire for improved highways have revolutionized the life of the farmer and he must make a more thorough study of the science of agriculture. Therefore, we need strong, progressive Granges in every State in the Union and wherever instituted they will become a power in moulding public opinion and improving the condition of the farmer.

The co-operative fire insurance and trade associations, as inaugurated by the Grange, have saved millions of dollars to the farmers, and the time has arrived when the farmer must better provide for the sale of his products and the purchase of his supplies through a well organized business corporation, managed and conducted by honest men of large experience and business qualifications. It is right that the farmer should protect zealously his own interests, and to success-

fully do this he must do it through a well established and thoroughly equipped organization. In the past farmers have allowed themselves to be guided in business methods largely by others who have perfected plans for them to follow. So long as this method prevails, they will fail to realize their full share of what the harvest brings.

The progress and perpetuity of the Grange has been more thoroughly established by the admission of woman to a full participation in its mysteries and instruction. She is not conducted to a silent seat in its congregation, but is given an equal voice in its councils and shares with the brother in its most exalted honors. She represents the faith, the hope and the charity of our Order.

The Grange is one of the prominent institutions of the country and it will continue to be one of the potent factors to better social, fraternal and educational conditions. It will promote co-operation among the farming population and elevate the the standard of American citizenship. This will only be accomplished through a united and intelligent organization. The Grange champions a higher education and it will furnish the key that will unlock

the great storehouse of knowledge and vouchsafe to its members the choicest gifts and blessings of life. America is a country filled with farm homes, hamlets and villages, and the man that tills the soil is the freest man on earth, but he should be ever on the alert to take advantage of opportunities offered. The Press is the strong lever of the country in advancing the interests of agriculture. With increased facilities for training in our College of Agriculture, combined with our Farmers' Institutes and Experiment Station, solidified by the 75,000 members of the Grange in this State, the farmers are coming to occupy a more advanced position along definite and independent lines. The Grange has opened the mystic lock that will advance the occupation of the farmer, relieve the isolation and dullness of country life and bring him and his family out into a broader sphere, making farmers more intelligent and self-reliant citizens, imbued with a clearer knowledge of what constitutes true nobility. The Grange is uniting the farmers in one grand fraternal bond, whose foundation stone shall be an enduring and prosperous agriculture.

I teach!
 The earth and soil
 To them that toil,
 The hill and fen
 To common men
 That live just here;

 The plants that grow,
 The winds that blow,
 The streams that run
 In rain and sun
 Throughout the year;

 And then I lead
 Thro' wood and mead,
 Thro' mould and sod
 Out unto God
 With love and cheer,
 I teach!

—L. H. Bailey.



COURTESY OF THE COUNTRY GENTLEMAN

THE DAIRY FLOAT

A CONCLAVE AGRICULTURAL

By C. S. Wilson, '04.

ABOUT eight o'clock on the evening of May ninth every agricultural student in Cornell University paused in the midst of his work and listened to the whistle blowing from the signal station. The next moment he had thrown aside his books and was making for the armory at break-neck speed. This signal was the public announcement that the Stewart-Monroe Agricultural bill had been signed by the governor.

The students had previously arranged that as soon as the bill received the governor's signature the fact should be made known to all by a certain signal. Each was then to come to the armory and assist in firing the governor's salute from the cannon. For several days the students had eagerly waited for this signal and now were ready to respond. Within a few minutes a large number of them had gathered at the armory and were busily engaged in firing the governor's salute of seventeen guns. By this time their ranks had increased to nearly 1,200. Not alone were these agricultural students. Students from all the colleges came out to join them

in their rejoicing. From the armory they proceeded in a body to visit the professors concerned and, as is customary for college students, demand a speech from each. A bull was procured from the barn to lead the procession. In this manner the students called upon President Schurman, Professors Bailey and Craig, and Senator Stewart. The next morning the following report came out from the Associated Press:

"Ithaca, May 9.—When word reached Ithaca to-night that Governor Odell had signed the State Agricultural College bill, appropriating \$250,000 for the erection of a college of agriculture on the Cornell campus, it was the signal for a demonstration in which over 2,000 students took part.

"The big guns in the university armory were wheeled out and over a hundred rounds of ammunition were fired.

"In the meantime the students were drawn up in a column, and headed by the university band and by six black bulls from the university farm, marched to the residence of Director

Bailey, who was called out for a speech."

If the bill should be signed by the governor, the students had desired to make known their appreciation of the fact by a general celebration, a celebration in which the agricultural leaders of the state who had worked so persistently and faithfully for the passage of the bill might take part. This appropriation was not for Cornell University alone. It was for a State Agricultural College to be built at Cornell, an agricultural college for the interests of the people of the state. With this thought in view the students asked the agricultural faculty, some of the agricultural leaders of the state, and the political supporters of the bill to join with them in a general celebration which should be held as soon as possible after the bill received the governor's approval. The students petitioned the faculty for a holiday which was readily granted.

As mentioned above the news of the signing of the bill came about eight o'clock on Monday night. The following Thursday was chosen for the holiday and celebration. But three days were left for preparation, and yet, when Thursday came, all was in readiness. Every agricultural student had been given something to do and everyone proved true to his duty. Each knew the place assigned to him and stood ready to act.

The celebration began at 6:45 p. m. For five or ten minutes every whistle in the city blew, the church bells rang, and everything capable of making a noise "let loose." As the echos from this medley of sound were dying away the parade began from the barn. In the lead was the cadet band. Then came a body of agricultural students all of whom wore straw hats. Following this came farm implements of all descriptions, the different breeds of live stock, and floats representing different phases of the college of agriculture.

The entomological float came first. On this the students were busily occupied in the study of insects. Now

and then one would thrust out his net to catch something and then eagerly display the catch to his fellow students.

The horticultural float contained a large number of plants. Here the students were busy making cuttings, potting plants, and general greenhouse work. Two sprayers were represented in the parade. On one of these was attached a placard which read, "Let Us S-pray."

An interesting feature of the parade was the international float. In this were the students in the college of agriculture representing the different countries of the world, twelve in all. Each carried his national emblem.

The "Six Black Bulls," which had taken part the Monday night previous, had become quite famous by this time. Our cover design shows him as he appeared in the parade. The shadows in the distance are the vision which the reporters saw. Other live stock was represented in the float. An amusing feature of the parade was "Mary's Little Lamb." A boy, dressed as a woman, was leading a lamb upon the back of which was a placard with the word "Mary's."

The poultry float came last. On the front of this was a large rooster, ten or twelve feet high, hitched to a chariot. Written on the side of the float were these words: "The youngest chicken in the college; I'll be bigger when I get my growth." This was one of Rice's Bantams.

After the parade came the bonfire and fireworks. Fully 5,000 people gathered on the slope west of the library to witness these. The bonfire was the biggest ever seen in Ithaca. While it was burning the chimes played from the library tower, imparting to the occasion an impressiveness and inspiration which was enjoyed by all. The fireworks began as the bonfire was dying down. It was a grand display, ending with a large set-piece of brilliantly colored initials, "N. Y. AGR."

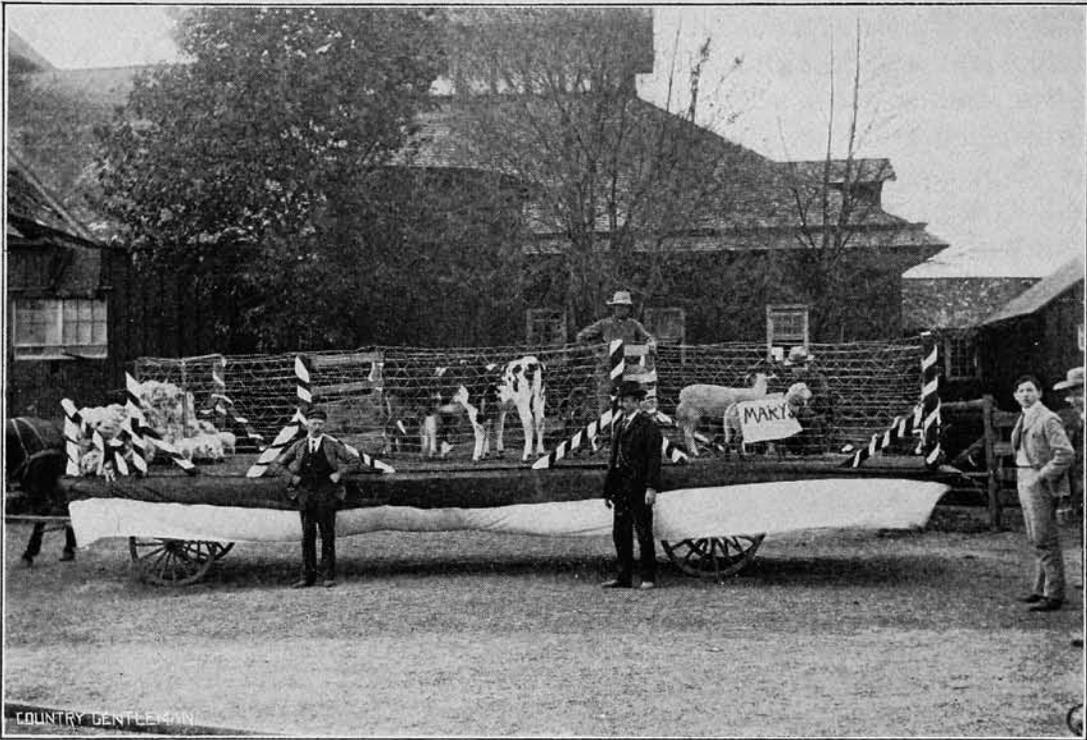
About nine o'clock the agricultural college with the guests retired to the armory for the banquet. The room was prettily decorated and the tables arranged to form the letters "C. U." There were several unique features connected with the banquet. Absolutely everything served here came from the University farm. The poultry department furnished chickens and eggs; the animal industry department, beef and pigs; the horticultural department, lettuce, radishes, strawberries, etc.; and the dairy department, cheese, milk, and cream. Wheat from the farm was ground into flour

meat, potatoes, salad and coffee were served in the same manner as at home around the family table.

About eleven o'clock President Schurman opened the speaking. The toastmaster was H. E. Cook, chairman of the committee for the promotion of agricultural interests in New York State and whose efforts in behalf of the bill had been untiring. The program, unique in itself, was as follows:

Our Legislators, C. E. Treman. Responses, Senator Stewart, Assemblyman Monroe.

Our Educators, A. R. Mann. Re-



COURTESY OF THE COUNTRY GENTLEMAN

THE ANIMAL INDUSTRY FLOAT

and then made into bread. Some was also roasted and used for coffee.

A boiled egg was placed at each plate. On each was the stamp of the agricultural college, so familiar to every student, "Approved, L. H. Bailey, Director." In addition to the above a verse was inscribed upon each. One of these verses was:

"Laid on the farm,
Brooded over for years,
Hatched in Albany."

The plan of serving was as near as possible like that in the home. Each table was presided over by the wife of a faculty member or guest. The

sponses, President Schurman, Professor Durand, Director Bailey.

Our Coadjutors, A. W. Litchard. Responses, Master E. B. Norris, Director Jordan.

Our Editors, B. G. Smith. Responses, W. G. Johnson, G. M. Tucker.

Our Supporters, Professor J. H. Comstock. Responses, T. B. Wilson, John Hall, H. E. Cook.

Among the songs were the following by Mrs. A. B. Comstock, the second of which was composed for the occasion:

THE OLD FARM AT CORNELL.

Air—"Music in the Air."

When dawn her bowstring drew—
 When her brightest arrows fell—
 They touched the meadows green
 That surround our fair Cornell.
 Hovering rains blew gently o'er,
 Winds their secrets love to tell
 To the grass and bending grain
 On the old farm at Cornell.

'Tis land that tells the world
 How to mine the depths below
 And change the buried gold
 Into Harvest's ruby glow,
 Great the power of brain with brawn!
 You have taught the lesson well,
 And your sons will think and work
 Though they're far from you, Cornell.

Off golden harvests store
 You have reaped from hill and dell;
 A store of royal love
 You have reaped from us Cornell.
 You have given our hearts new warmth
 And our hands new strength can tell--
 While both hearts and hands shall show
 Truest faith in you, Cornell.

OUR SONG OF VICTORY

Air—"Marching Through Georgia."

Sing the old farm at Cornell, it makes a
 glorious song.
 Sing it with a spirit for it helped the world
 along,
 It builded our foundations and it made them
 good and strong,
 From it we reaped our fair victory.

CHORUS.

Cornell! Cornell! 'Tis a glorious place
 to be,
 Cornell! Cornell! With a schoolhouse fit
 to see.
 Sing it loud and clear boys, for the farm-
 ers yet to be;
 Singing to-night of our victory.

Sing the new farm at Cornell, for a new
 song we must sing,
 Where'er the plow share cuts the soil, there
 shall our voices ring,
 Farmer boys from all the world we will to
 Cornell bring,
 Joining our chorus of victory.

CHORUS.

Sing the old and new Cornell, [together they
 shall stand,
 For tilling soil and making men the greatest
 in the land,
 Every farm in New York State shall take or
 lend a hand,
 Helping us reap our fair victory.

CHORUS.

The banquet closed with the pre-
 sentation of a loving cup to Director
 Bailey. This came from the students
 as a token of their love and esteem.

And what does all this signify?
 Does it mean merely that Cornell is
 to have a new Hall of Agriculture?
 No, it stands for more than this. It
 means that the farmers of New York
 State are to have a larger and more

comprehensive agricultural college,
 a college through which agricultural
 interests shall be awakened, agricul-
 tural knowledge disseminated, and the
 farmers of the state brought into
 closer relations. Through the influ-
 ence and inspiration radiating from
 this college year after year and em-
 bodying, as it shall, the highest aims
 and ideals, New York will become
 the foremost state in agriculture, and
 well worthy of the name—"Empire
 State."

The Iowa legislature has appropri-
 ated \$305,000 for the College of Agri-
 culture. Of this, \$22,000 is for the
 purchase of a dairy farm and \$62,000
 is for dairy buildings and equipment.
 Poultry investigations and good roads
 experiments receive special appropria-
 tions. In addition to these amounts,
 appropriations for \$223,500 were made
 for the state university and normal
 school.

* * *

We note from the *Experiment Sta-
 tion Record* that the annual report is
 to contain an article by President K.
 L. Butterfield, of Rhode Island, on
 Agricultural Economics as a Subject
 of Study in the Agricultural Colleges,
 with a syllabus of a college course.

"President Butterfield takes the
 ground that a course in rural economy
 should be more than the study of farm
 management: that 'farm management
 discusses the aspect of agriculture as a
 business and approaches agriculture
 from the standpoint of the individual
 farmer, while agriculture is some-
 thing more than a business; it is an in-
 dustry. And because agriculture is
 an industry, and indeed ranks among
 the leading industries, it is related to
 all other industries and must be con-
 sidered in those relations. It is not
 an isolated occupation. It is subject
 to economic law. It prospers or
 lags, not merely because of its internal
 phases, so to speak, but also because
 of its external relations.'"

The Cornell Countryman

G. F. WARREN, Editor

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R. W. CURTIS,	} - - -	Alumni Editors
G. N. LAUMAN,		
MARY C. SHEPPERSON,	} - - -	Assistant Editors
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CHRISTIAN BUES,	- - -	Business Manager
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L. F. AYER,		
P. E. CLAPP,		

JUNE, 1904

The Year's Work

The next number of the COUNTRYMAN will appear after the summer vacation. At that time a new board will be in charge. However, very little change has been made in the management, as all but two of the new board have been working on the paper this year. The constitution of the paper has been so arranged as to try to secure a fairly constant management. It is, therefore, unnecessary to have a "valedictory" and "salutatory" each year.

The following board will manage the paper next year; C. S. Wilson, editor; R. W. Curtis and M. W. Evans, alumni editors; C. Bues, Miss F. M. Cook and E. Keily, associate editors; P. E. Clapp, business manager; O. Lee, H. W. Hochbaum and T. H. King, assistant managers.

There was some question as to the advisability of starting such a publication; but the fact that the paper is now on a good business basis is sufficient proof of the need. The policy has been to deal with the broader problems of country life and agricultural education. We have been greatly aided in this by the generous response which the leaders in agricultural work have made to requests for

articles. During the past year much of our space has been devoted to agricultural education, as this is one of the greatest problems in America. In the future more space will doubtless be given to farm problems.

The news of former students has been the most popular department with the Cornell men. This work and the campus news will be better done next year as we come to learn the location of more of our alumni. The magazine is a Cornell agricultural enterprise and it is the aim to make it indispensable to every man who has studied agriculture at Cornell.

We cannot close the year's work without mentioning the thorough organization of the agricultural students and faculty. To plan the biggest celebration ever seen at Cornell and to prepare a banquet exclusively from products of the University farms for 263 people and all this in three days indicates and organization and unity of purpose that knows no defect. It is this same spirit of unity that has made the CORNELL COUNTRYMAN possible.

Rural Architecture

Our frontispiece shows one of the fine old farm homes that are still common in New York. It might be improved if it were two full stories high and if the porches were a little broader. We wish that there were more such houses, or rather that the new ones were of as pleasing a type. There is, at present, too much of a tendency to copy what has been aptly termed the "millinery" style of architecture.

The high price of city lots doubtless influences the type of the city residence—space is unlimited upwards,

but is expensive laterally. Houses that are suited to such conditions are entirely out of place in the country. The city residence frequently reminds one of the forest tree that has been forced to grow upward to the light. It may look well when flanked by its equally tall neighbors, but when standing alone on the broad farmstead, it is as much out of place as is the forest tree deprived of its supporting neighbors. Rural architecture should remind one more of the broad, spreading oak that has had light and room enough, and to spare.

How much more beautiful and homelike is such a house with its broad porches, upheld by pillars that give promise of support for generations to come, than is the imitation of a city residence that has a gable hung on every available corner—sometimes exceeding the historical seven. It is to be hoped that there will be a revival of the strong, plain, dignified designs that make one feel the breadth and generosity of the owner.

What the Former Students are Doing

The statement is frequently made that agricultural colleges educate away from the farm. Members of the COUNTRYMAN board have just completed a tabulation of the present occupations of the former students. Quite a large number have not yet been heard from. The percentages are based on the information thus far received.

Of the total number of living former students who are not in school and whose occupations are known, 71 per cent. are in some form of farm work, 20 per cent. are in some form of agricultural education work; or a total of 91 per cent. who are either farming, or pursuing some line of work directly allied to agriculture. Certainly, the Cornell College of Agriculture does not educate away from the farm. It is very doubtful whether any other professional or technical colleges could show as large a percentage of their graduates who are continuing in the profession for which they prepared.

OCCUPATIONS OF FORMER STUDENTS OF THE COLLEGE OF AGRICULTURE

	Ph. D.	M. S. A.	Graduate Students	B. S. A.	Regular Students not Graduates	Special Students	Winter Dairy Course	Winter Course in Agriculture	Total
Agricultural College and Experiment Station Work.....	8	26	8	53	4	15	6	2	122
U. S. Department of Agriculture.....	2	8	2	1	2				15
Farmers, Nurserymen, Farm Managers, Etc.....		2	4	35	24	45	46	176	332
Creameries, Cheese Factories, Etc.....					1	3	156	3	163
Editors.....	1	1	1	2		2			7
Landscape Architects.....				9					9
Physicians.....				5	7	3	1		16
Students.....				5	78	68	4	5	160
Miscellaneous.....				11	13	11	5	6	46
Died.....		1	1	5	6	7	5	4	29
Occupation Unclassified at this Writing..			3	5	168	161	348	317	1002
Total.....	11	38	19	131	303	315	571	513	1901

FORMER STUDENTS

'74, B. S. A.—Wm. R. Lazenby is professor of horticulture at the Ohio State University at Columbus, Ohio. He was elected secretary-treasurer of the Ohio State Forestry Society at the time of its organization, Dec. 11, 1903. The object of the society is to awaken interest in the planting and protection of trees and forests. In a small pamphlet published by Professor Lazenby, he urges the farmers to support legislation which would encourage the reforestation of lands not profitable for agricultural purposes.

Ex-'80—Chas. J. Pennock is living at Kennett Square, Pa. He is ornithologist of the Delaware State Board of Agriculture.

'90 Special—F. H. Burnette is professor of horticulture at the Louisiana College of Agriculture. Professor Burnette was among the first to send a good word of welcome for the young COUNTRYMAN. It is this unanimous appreciation among our former students that makes us feel that the COUNTRYMAN really has a mission in life. Every man who has gone out from the college is interested in better agriculture. It is the privilege of a paper like this to keep the Cornell spirit circulating. It should keep us in touch with each other and especially bind us close to the college of agriculture. Here we have a common love. We are proud of the name, Cornell, and surely in the spirit of Mrs. Comstock's recent song, "'Tis a glorious place to be." So let this be one mission of the COUNTRYMAN—to keep our hearts still young with loyalty for her we all love so well.

Ex-'96—J. C. Blair is professor of pomology at the University of Illinois. He is also the head of the department of horticulture, which has a staff of five.

'96, Special.—Wm. H. Morgan is proprietor of the Brookview Fruit Farm and Nurseries at Westmont, N. J.

'97, Dairy.—Henry B. Jordon is farm manager of the Hemenway Farm at the Hampton Normal and Agricultural Institute, Hampton, Va.

'99 Winter—Geo. H. Bostwick is junior member of the firm of D. C. Bostwick & Son, fruit growers, at Ripley, N. Y.

'99 Winter—George B. LaMont is on a fruit farm at Albion, N. Y., and is one of the directors of the Orleans County Fruit Growers Association.

'99 Graduate work—Frank A. Waugh received his B. S. in 1891 and M. S. in 1894 at the Kansas Agricultural College. He is now professor of horticulture at the Massachusetts Agricultural College. Professor Waugh is the author of several books one treating of landscape gardening, one of Plums and Plum Culture, another of Fruit Harvesting, Storing and Marketing, and another recently published entitled Systematic Pomology, which deals with the descriptions, nomenclature and classification of fruits.

'00, Winter.—Joseph W. Bloomer is proprietor of the Clover Dale Farm, at Marlboro, N. Y.

'00, Special.—Herbert C. Churchill is on the home farm at Akron, N. Y. From the tone of his letter, it is evident that he carries the Cornell spirit to his farm and into the social life of the neighborhood.

'00, Winter.—Willoney Welsh, Lenox, Mass., was superintendent of the Gray Rock Farm of Scarsdale, N. Y., for a year after leaving Cornell, but is now in charge of the poultry department of Mr. John Sloan's country place at Lenox, Mass.

'00, B. S. A.—C. F. Pilat after leaving Cornell spent six weeks in Europe studying the parks and gardens of England, France and Germany. On his return to New York he was engaged by Charles W. Leavitt, jr., as assistant landscape architect. Mr. Pilat stills holds this position.

'01 Winter—A. M. H. Shepherd is engaged in the nursery business under the trade name of Laurel Hill Nurseries, Scranton, Pa. He was especially well pleased with the picture of Professor Roberts used as the frontispiece of the April issue of the COUNTRYMAN. He expresses his satisfaction by writing that "it is good enough to frame 'for keeps.'"

'01, B. S. A.—DeLos L. VanDine. *The Pacific Commercial Advertiser* of Honolulu, Hawaii, in a recent issue describes the new Insectary which has been added to the buildings of the Hawaiian Agricultural Experiment Station, "on the Slopes of Tantalus back of Punchbowl." Two plates show exterior and interior views of the building. As all Cornellians know, an insectary is practically a green house in which living insects may be kept in breeding cages for study. It is interesting to remember that the first insectary ever built is the one now in use at Cornell. This was planned by Professor Comstock in 1888, and is described in Bulletin 3. Cornell Agricultural Experiment Station.

The entomological department of the Hawaiian Experiment Station has been established barely two years, but with Professor VanDine in charge great progress is being made. One member of the Experiment Station staff is constantly traveling in foreign countries and sending in insects and other animals that may prove beneficial in combating the insect pests of Hawaii. One of these pests which is very troublesome in the Islands, as with us, is the mosquito. Last fall Professor VanDine issued a press bulletin tersely stating the life history, habits, and remedial measures for this pest. These bulletins were cardboard notices to be tacked up in conspicuous places, and were printed in five different languages, English, Portuguese, Chinese, Japanese, and Hawaiian.

'02 Dairy—For two years after leaving Cornell Frank H. Darling had charge of a dairy farm at Derby. This spring he accepted a remunerative position as manager of the dairy department on a farm of three thousand acres at Millbrooke-on-the-Hudson.

'02 Dairy—Benjamin Brown has charge of the Farmers' Creamery at Mongaup Valley, N. Y. He writes that the creamery is in a prosperous condition.

'02 Dairy—W. W. Goodrich. There is a large demand in some of the western states for assistants in or operators of creameries. The high wages

offered induced Mr. Goodrich to accept a position at Oberon, N. D. He is now manager of the large co-operative creamery at that place.

'02 Dairy—Thomas W. Telfer has a dairy farm and is selling milk at Bay Shore, N. Y.

'02 Dairy—Paul F. Ramseyer last year had charge of the creamery at Postville, N. Y. This spring he purchased the Chase Farm Creamery near Syracuse.

'02 Dairy—Theodore Van Der Menlen is employed at a large dairy farm at Plainsfield, N. J.

'02 Dairy—J. E. White is in charge of the Plainsboro, N. J. farm of the Walker-Gordon Co.

'02 Winter—Harry A. Garret has bought in partnership with his brother a farm in Chester Co., Pa. His address is now, Garret Bros., West Grove, Pa.

'02 Winter—Harland H. Jackson has a two hundred and sixty acre farm at Boonville, N. Y. He is enthusiastic and successful in his work, and attributes his success in a large measure to what he learned while at Cornell.

'02 Winter—Arthur L. Schuttleworth, R. F. D. 17, Fredonia, N. Y., has a farm of eighty-five acres, thirty-five of which are planted with grapes. He is in the Chautauqua grape belt. For the last two years the grape vine root worm has done great damage, and has caused much alarm. Schuttleworth thinks that the result will be that the farmers will plant more of other fruit, especially peaches, to which that section is well adapted.

'02 Winter—John M. Lisk is raising pure-bred poultry at Romulus, N. Y. His specialty is white leghorns.

'02 Winter—John S. Morse is running the home farm at Triangle, Broome Co., N. Y., and has recently purchased an adjoining farm which he intends to work this year. He finds the labor problem a serious question.

'02 Winter—Colin E. Nichols is working on the home farm at Lewiston, N. Y.

'02 Winter—Chas. E. Traver has lived on the home farm at Pleasant Valley since leaving Cornell. During the past winter and spring he has been in the Central West, "to see what others are doing." This summer he will go back to the old farm. He sees no reason for the eastern farmer to be discouraged. He says that the New York State farmer has a bright future in the production of special crops, such as good milk, good fruit, good poultry, etc.

CLASS OF 1881

'81, B. S. A.—Fred L. Kilborne is a farmer and veterinarian at Kelloggsville, N. Y.

Ex. '81.—Leslie A. Baker decided in his sophomore year to specialize in art. He is now an instructor in drawing at Cornell.

Ex. '81.—Willis T. Mann is operating the Evergreen Fruit Farms at Barker, N. Y.

'81, B. S. A.—William H. Bates is in Washington, D. C. His address is care C. O. Bates, Internal Revenue Office, Washington, D. C.

'81, B. S. A.—Edwin W. Catchpole is a farmer and fruit grower at North Rose, N. Y. He has sixty acres of apples, and exports most of his fruit. In his community he is known as an extremist in thorough cultivation and spraying. He introduced a resolution into the State Grange, favoring the appropriation for our agricultural buildings.

'81, B. S. A.—Albert G. C. Hahn, '85 M. S., took his Master's degree in chemistry and is now in business in New York City. His address is 44 W. 44th St.

Ex. '81.—Julian Holman, who left here in his junior year, went to Southern California to engage in sheep raising. His address is unknown.

'81, B. S. A.—Joseph A. Holmes who is state geologist at Raleigh, N. C., has been appointed chief of the Department of Mines for the St. Louis Exposition.

'81, B. S. A.—Geo. C. Watson is professor of agriculture in the Pennsylvania State College at State College, Pa. Professor Watson is Dean of the correspondence school in agriculture which is one of the largest and best of its kind in the U. S.

'81, B. S. A.—Henry Hiram Wing went to the University of Nebraska, where he taught from '84 to '88. In '88 he came back to his Alma Mater to teach and received his Master's degree in '91. This year his chair has been divided and he is now professor of animal husbandry.

The addresses of following '81 men are unknown:

Theodore Badger, Ex. '81.

Jerome W. Bayer, Ex. '81.

Chas. O. Upton, '81, B. S. A.

We are glad to record the receipt of a communication from the Percheron Registry Co., Columbus, Ohio, stating the recognition of this company by the secretary of Agriculture. With the constantly growing demand for good draft horses in the East, every new impetus, improving the business of horse-raising, should be received with satisfaction. We also congratulate Messrs. McLaughlin Bros. on their success in the Percheron business this year.

Hammond's Slug-Shot has been used successfully for many years and for many purposes. Would it stand the test of time if it were not a convenient, handy, ready-made farm necessity. Read Mr. Hammond's historical notes on page 218.

Orr's Wyandottes

Famous the Country Over

Silvers for 24 years, (Now 10 pens)
Whites for 8 years, (Now 9 pens)
Partridge for 5 years, (Now 5 pens)

Also Goldens, Buffs, Blacks, Silver Penciled and Five Grand Pens of Buff Orpingtons

Prize winners at leading shows, N. Y., Phila., Pan-American, Hagerstown, Pittsburg, Cleveland, Indianapolis and Chicago in our 35 yds.

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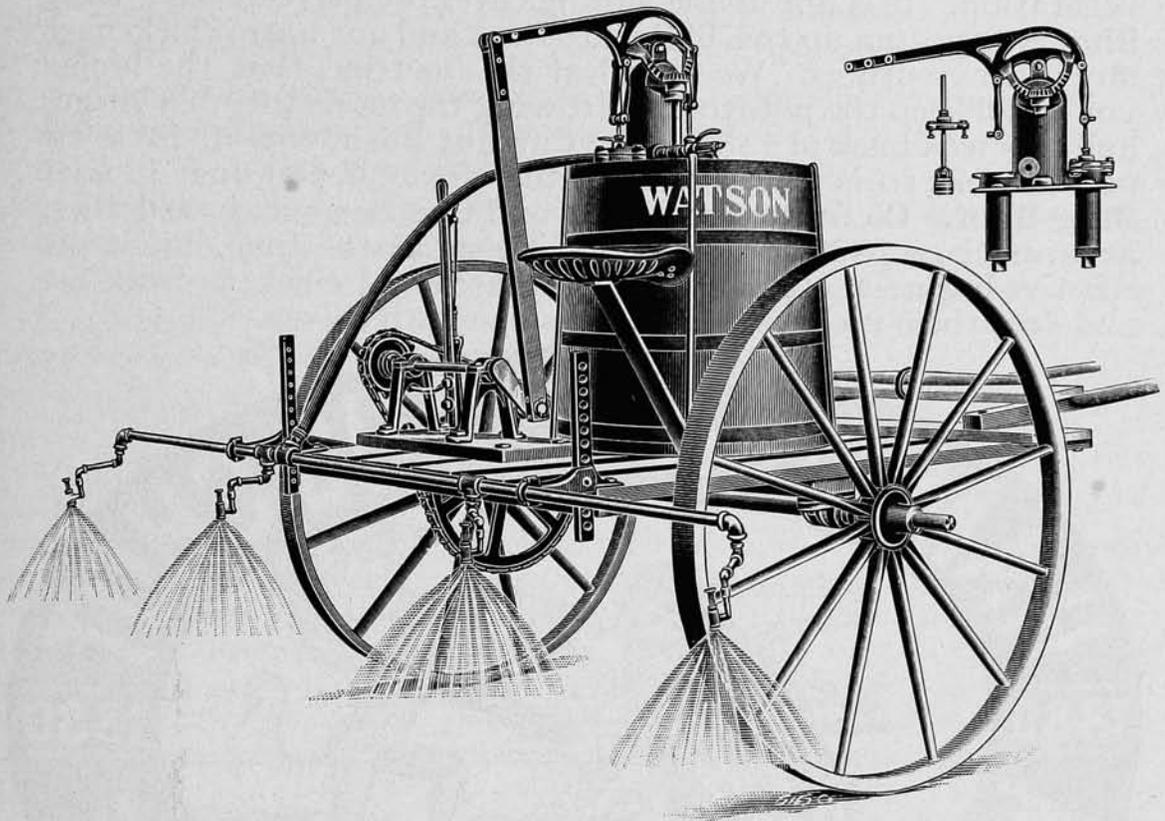
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Stirs the Liquid and Keeps the Suc-
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Fitted with thills for one horse ; tank holds sixty gallons.

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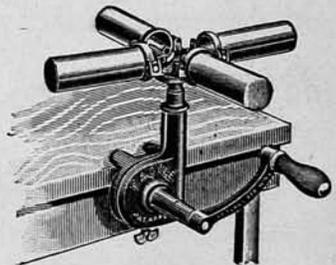
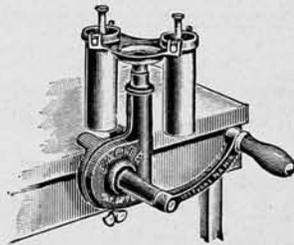
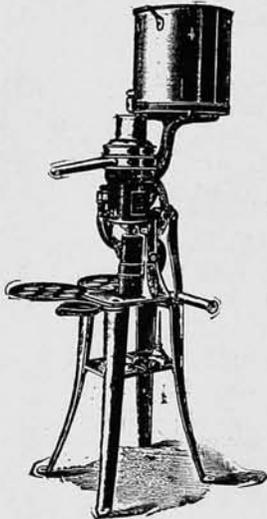
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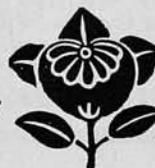
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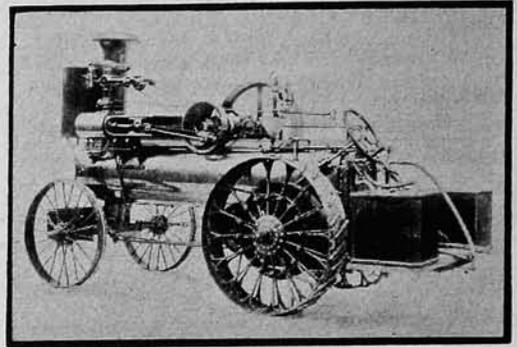
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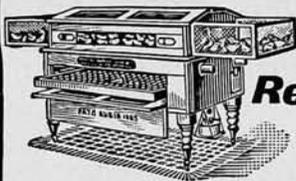
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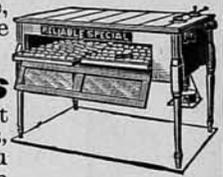
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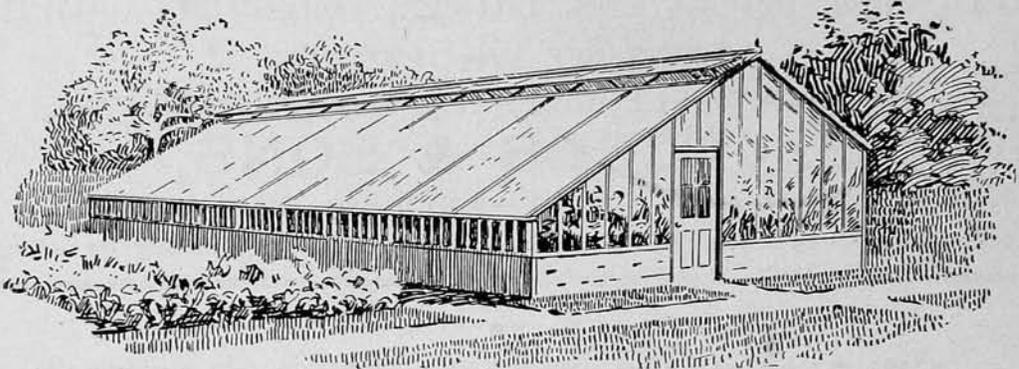
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At the Great Annual Show of France, held at Evreux, June, 1903, our stallions won First, Second, Third and Fourth prizes in every Percheron stallion class; also won First as best collection.

At the show of the Societe Hippique Percheronne de France held at Nogent-le-Rotrou, June 1903, our stallions won every First prize, over Forty prizes in all. Two groups were made up of our exhibit on which we won First and Second.

At the American Royal, 1903, our Percheron stallions won every First prize. One of our Percherons won Championship. Five of our Percherons won First as best collection. Our French Coach stallions were equally successfully, winning every First prize.

At the Iowa State Fair our Percheron stallions won Three First prizes and First in Collections.

At the Minnesota State Fair our French Coach stallions won every possible First prize and Grand Sweepstakes.

At the Ohio State Fair our stallions won Fourteen First prizes out of a possible fifteen.

At the Indiana State Fair our Percherons won Three First prizes. Our French Coachers won every possible prize.

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Ours are the very best, we import more of them, sell more of them and therefore can furnish our customers a better horse for the money than can be bought elsewhere.

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to do the most good your encouragement should reach us before
to help us over the critical point.

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190

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The Cornell Countryman



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THE CORNELL COUNTRYMAN
CORNELL UNIVERSITY
ITHACA, NEW YORK

Constitution of The Cornell Countryman.

Article I-Name.

There is hereby organized an association to be known as The Cornell Countryman.

Article II-Object.

The object shall be to publish The Cornell Countryman, a magazine devoted to agriculture.

Article III-Officers.

The officers shall consist of a Board of Editors and Managers. There shall be one Editor, one Alumni Editor, and four Associate Editors, one of whom shall be assistant to the Alumni Editor; one Business Manager and three Assistant Managers.

Article IV-Term of Office.

The term of office shall be one year.

Article V-Competition.

Two positions as Associate Editors and two as Assistant Managers shall be filled by competition. The persons not on the Board, who do the most and best work, shall receive these positions for the following year, provided, that if less than the above numbers do a satisfactory amount of work, only those who have done a creditable amount of work shall receive positions. The Board of Editors shall pass upon the

work of competitors for Associate Editors. The Board of Managers shall pass upon the work of competitors for Assistant Managers. One who has gained a position by competition is not thereby debarred from election to another position.

Article VI-Nominations and Elections.

On or before the 1st of April of each year, the Board shall call a meeting of the organization to elect two members of the Nominating Committee. The Editor, Business Manager, and Director of the College of Agriculture shall be ex-officio members of the Nominating Committee; the Nominating Committee shall nominate the Editor, Alumni Editor, Business Manager, and as many Associate Editors and Assistant Managers as are needed to complete the Board, and shall publish the nominations one week before the meeting held for the election of officers, which shall occur on or before April 1st. At this meeting the Editor and Business Manager shall make their annual reports. All officers shall be eligible for re-election.

Article VII-Quorum.

Twenty members of this organization shall constitute a quorum.

Article VIII-Vacancies.

Vacancies occurring during the term of office shall be filled by the Board.

Article IX- Membership.

Any resident member of the College of Agriculture, or of the Agricultural Association, who is a paid-up subscriber to The Cornell Countryman, shall be entitled to a vote.

Article X- Special Meetings.

The Board may call a special meeting at any time, and shall call such a meeting on the written request of ten members of the organization.

Article XI-Amendments.

This constitution may be amended by a two-thirds vote of the members present, provided that notice of such proposed amendment shall have been given at least two weeks previous, and that the proposed amendment be posted on the College bulletin board at least one week previous to the time of voting on the same.

Members of the Nominating Committee 1904.

H. Bailey, G. F. Warren, C. R. A. Bues, ex-officio.

G. A. Bell, A. R. Mann.

At a meeting of The Cornell Countryman the following officers were elected for the year 1904-1905.

C. S. Wilson, Editor.

R. W. Curtis, Alumni Editor.

* M. W. Evans, Associate Alumni Editor.

C. R. A. Bues, Associate Editor.

* E. Kelly, Associate Editor.

Miss F. M. Cook, Associate Editor.

P. E. Clapp, Business Manager.

* O. Lee, Assistant Manager. (Advertising)

* H. W. Hochbaum, Assistant Manager. (Circulation)

T. H. King, Assistant Manager.

* Position secured by competition.

