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Table of Contents

OCTOBER, 1914

Frontispiece—Dr. Beverly T. Galloway, Director, New York State College of Agriculture

A Word of Greeting. Dr. B. T. Galloway

Summer Schools at the New York State College of Agriculture. A. R. Mann

A Word to Freshmen. J. G. Needham

An Agricultural Survey of New York State.

Article No. 1.—Geologic Origin and History of the New York State Soils. O. D. von Engeln

Article No. 2.—The Soils of New York State. H. O. Buckman

King Corn—Poem by W. P. Alexander

Experiences of Cornell Professors in the War Zone.

Notes on a Summer in Germany. H. H. Love

Last Summer’s Experiences in Germany. E. G. Montgomery

The Art of Accounting as a Factor in Home Economics. Edith C. Fleming

Conference of High School Teachers of Agriculture. A. K. Getman

Editorials

Campus Notes

Former Student Notes

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DR. BEVERLY T. GALLOWAY
Director, New York State College of Agriculture
A WORD OF GREETING
By Dr. Beverly T. Galloway
Director, New York State College of Agriculture

As this is written a great army is being mobilized in this country. It is an army of conquest—an army that, when its full term of service is reached, will march out to scatter the forces of ignorance and to bring the blessed light of knowledge into all the world. The army this year will in all likelihood number a hundred thousand strong. It will be recruited largely from the homes of the open country. Strong, virile, young men and women fresh from the fields and forests will constitute the active force. It will require more than seventy-five hundred trained men and women to guide and direct the destinies of this army during the next nine or ten months. It is a grave responsibility. The work will be in progress in something over fifty widely separated places, but in every place the object will be the same, namely, the fulfillment of the wish born in the hearts of thousands of our people for the blessings and graces of an education. The fifty agricultural colleges are fulfilling a great mission. Coming into being over fifty years ago as a direct demand of the common people, their power and influence for good has broadened and deepened until now they are assuming leadership in many fields. The State College of Agriculture at Cornell University has been no laggard in all those things that have made for progress. It has been close to the people. It must remain so.

We are entering upon a new era. There are indications that we are reaching the crest of a great surge of public sentiment that has cried aloud for ten years for more light and more action along agricultural lines. Practically every agricultural institution in the country has been pushed to the very limit of its capacity, and in some cases beyond that limit, for aid to the farmer. Little opportunity or time has been given for developing the highest efficiency. We must begin to think of these things now. We must keep in mind that we are a part of a great organization that materially affects the state, the nation, and even the world at large. To all those agencies within the state, entrusted as we are with responsibilities to the people in the matter of agricultural advancement, we must render every assistance within our power. From all such agencies we invite help and cooperation. We need to give and we need to receive. As our portion of the army of enlightenment begins to assemble there will be many who for the first time find themselves in a college atmosphere. The experience will be novel; but bear in mind that it is a part of the general scheme of education. There will be found everywhere a spirit of democracy, and a feeling of aggressive loyalty to the institution and all that the institution stands for. Every effort must be made to help maintain all these things. It will come to be seen that the solu-
tion of many of the problems pressing in upon civilization to-day lie in the direction of education that trains men to be men and to make the world more productive. The future of the world will depend in a large part upon its food supply, and it is from the soil that the food supply must mainly come. Loyalty, therefore, to the aims, objects, precepts, and principles of the institution is a part of its training. Loyalty, however, does not mean narrowness of vision or a failure to appreciate the advantages which contact with a great university such as Cornell will give. As agricultural education broadens its scope and extends its activities, its liberalizing effects will be measured by the manner in which it treats the efforts of workers in allied fields.

To most of the student body the writer is a stranger. For a quarter of a century, in a related field, he has watched your institution grow from a small and struggling twig into a strong and vigorous tree. Verily, it has become a tree of knowledge. He is proud to be one of those devoted to the care and welfare of that tree. He will need your help and the help of all those who planted the twig, who tenderly cared for it in its struggling days, and who have seen it well started on the road to become a monarch of the forest.

SUMMER SCHOOLS AT THE NEW YORK STATE COLLEGE OF AGRICULTURE

The Facilities of the College are now Utilized Continuously Throughout the year.

By Professor Albert R. Mann
Secretary, New York State College of Agriculture

By the inauguration of the third, or summer, term, the College of Agriculture has finally realized a long cherished desire to give instruction to students in residence throughout the twelve months of the year. The first full-length summer term in the New York State College of Agriculture, and, it is believed, the first full-length summer term to be offered by any college of Agriculture in this country, opened on June 8, 1914, and closed on September 23, 1914. Correspondence received by the College during the past summer shows that a number of other colleges of agriculture are contemplating similar action, and we may expect that summer terms will ultimately be offered by many of them.

The third term was established for the primary purpose of taking advantage of the growing season in teaching certain subjects to students regularly registered in either graduate or undergraduate courses. Under the present plan the summer work will always be for upperclassmen and postgraduates, as persons lacking the equivalent of the required work of the freshman and sophomore years are not eligible for admission. Undoubtedly special stress will always be laid on the opportunities for advanced and graduate work.

Necessarily, the beginning this year was small both in number of courses offered and in enrollment. The introduction of the new term affects the organization of the entire college year and some time will be required for the complete readjustments. Nevertheless, forty-eight courses of instruction were offered and practically all of the classes were carried. The smaller classes were welcomed by both stu-
students and staff and the summer’s work was carried with very general satisfaction on the part of both.

On July 6, 1914, the fourth Summer School in Agriculture was opened. This six weeks school is intended to meet the needs of principals, teachers, and supervisors of schools, with opportunities also for college students and others. From the beginning, about fifty per cent of the registration regarded as the most satisfactory and successful of the four.

Throughout the week of July 13 to 18, the teachers of agriculture in the high schools of New York State met in conference at the College under the direction of Professor E. S. Hawkins, of the State Education Department. With three or four exceptions, all of the teachers of agriculture in the state were present. The conference had an

ONE OF THE EXHIBITS OF THE WORK OF RURAL ORGANIZATIONS AND INSTITUTIONS, DISPLAYED IN THE FORESTRY BUILDING DURING THE SCHOOL FOR LEADERSHIP.

each summer has been made up of persons directly engaged in school work. During the four years since it was established, the summer school has had a substantial growth, as indicated by the following figures: 1911, 128 students; 1912, 223 students; 1913, 333 students; 1914, 388 students. From every standpoint, the school of the past summer may be re-

enrollment of fifty-one, although agriculture will be taught in only about forty-five high schools during the coming year. The conference concerned itself with the latest advancements in various lines of agriculture, together with methods of presenting subject matter to classes and to farmers' gatherings. There was con-
A WORD TO FRESHMEN

By James G. Needham
Professor of Entomology and Limnology, Cornell University

(NOTE—Every freshmen at Cornell should read this article for it contains excellent advice).

We, who are growing old in the College of Agriculture, are glad to welcome incoming Freshmen to a share in our work. We have been looking for you. We have been getting ready for you longer than you know. Science has been making progress, and we have been trying to make the best of recent knowledge available for your use. Agriculture has been developing rapidly and we have been trying to make the best of agricultural experience ready for your equipment. The best of all that has gone before you will find in your textbooks, and our laboratories and fields exist mainly for the purpose of making this knowledge available to you. We know you are here to equip yourselves for life. We are here to help, by the best practices we are able to devise. We believe that we can put in your hands the tools of an agricultural education. You must use the tools yourself.

Make no mistake about this. It is not what we do, but what you do that educates you. A good mind is developed by proper exercise, as good muscles are. Don't spend your time and your father's money without making a reasonable effort to get something good in exchange. Don't spend your time and your father's money without making a reasonable effort to get something good in exchange. Be not among the few foolish ones who spend most lavishly, and then exert all their ingenuity to avoid getting anything of permanent value in return. For the College cannot give you an education, and idleness and heedlessness in College will only make the bigger fool of you. No, the College has but one thing to offer you, and that is an opportunity to equip yourself for your life's work.

These things you should note about the plan of the course upon which you are entering. The first part of it will keep you occupied with a great variety of rather general subjects, affording you a chance for a broad outlook upon the great fields of human interest. The latter part of it will give you an opportunity to study the subjects that are of most interest to you, giving you a chance to acquire more practical knowledge in the field you wish to make your own, and thus prepare you more directly for the work of life. During all of your course you should be thinking of what share you want to take in the world's work. You should be tasting all these subjects, and finding out what you like most. You should be trying all the work set before you, carefully finding out what you can do best. Probably what you like most you can do best. Certainly no one can do his best at something he does not like. There is a place for you in the line of work you can do best, and you can find it; so get ready for it, and doubt not. In every line of effort there is an unsatisfied demand for more well equipped men and women.

In College you will have greater freedom than you had in High School. You will not be called so often by your first name. Home influences will seem more remote. No one will seem to be watching you. Yet there will be men watching the records of your work, and taking notes of how you improve your time and opportunities; and these are they who later will have much to say about putting good men forward for important places. So, as you value your chances in life, take heed to how you spend your time. Learn how to look out for yourself now, if you have not learned it earlier, and organize your activities on some rational basis.
Study, betimes, the routine of your own mental workshop. Try to get it organized on a basis of efficiency. Specialists in teaching will tell you how to study the subjects of the curriculum, but there are some things about the working efficiency of your own mind that you will have to study for yourself. Observe what methods yield you the best results, give you the best mastery of your work, and extend those methods. If you have been in any degree slipshod and ineffective in your methods, now is your last chance to correct them—your last leisure for continuous study. The four years have a way of slipping by with a suddenness that is startling when viewed from the end of the course, and then comes work, that usually is so insistent one can but follow the methods of action he has already acquired.

There is one sure and safe rule for getting through College. It is to do each day's work as you come to it, do it as well as you can, and clean it up as you go. Daily tasks left undone soon prove a great handicap, for they impede progress and accumulate trouble.

Lastly, be cheerful, and help when you can in such of the common tasks of students in the College as appeal to you as being most worth while. While learning to work alone, you should be learning also to work with others. No finer opportunity for this will ever come your way than is offered by a reasonable share in the College activities.

AN AGRICULTURAL SURVEY OF NEW YORK STATE

ARTICLE No. 1

Geologic Origin and History of the New York State Soils

By O. D. von Engeln
Assistant Professor of Physical Geography, Cornell University

(EDITOR’S NOTE—This is the first of a series of articles dealing with the Agriculture of New York State. For full details of the series see the Editorial Column.)

NEGLECTING consideration of the vegetative mantle and its residual products, the surface material of the whole area of New York State is made up either of consolidated or unconsolidated rock substances. To the consolidated material the geologist applies the term bed-rock, to the unconsolidated, loose particles, the term mantle-rock. The farmer knows the mantle-rock as gravel, sand, loam, clay, according to the size of particles composing it; and, where cultivated, calls it, in general, soil, and further divides it into top-soil and subsoil. In limited areas, chiefly on high elevations and along the sides and bottoms of stream valleys the bed-rock is exposed at the surface; but the soil cover is so complete that it is often not realized that soil particles are all derived from bed-rock substances and that everywhere a boring through the mantle-rock would eventually strike bed-rock, the depth at which this would occur varying from a fraction of an inch to hundreds of feet according to the locality. In other words, solid rock materials and soil materials are essentially identical except for organic inclusions in the latter and the modifications brought about by the contact of the mineral soil-stuff with air and water under varying temperature conditions. It follows, therefore, that the nature of the soil of a given region is intimately related to the kind of bed-
rock from which it has been derived and to the particular processes by which the rock has been disintegrated and deposited in its present position.

Ordinarily the processes that break up the bed-rock into the finer particles that compose soil at the same time alter the material by the abstraction of some elements and the addition of others. Commonly the more soluble constituents are leached out, and new, more stable mineral compounds are formed by the addition of oxygen and carbon dioxide from the air and of water from the rainfall. Thus normally solid rock is broken up mechanically, and chemically converted into soil particles by a slow and continuous series of changes. But in New York State, as well as over much of the northeastern part of the United States, the existing soil was developed quite differently and with comparative suddenness. The solid bed-rock was first thoroughly ground up, mechanically, and the bulk of fine particles so produced was then, (and this quite recently from a geological viewpoint) first exposed to atmospheric changes. Consequently it may be presumed that New York State soils more nearly resemble in composition the bed-rock varieties from which they have been derived than is the case, for instance, with soils found in the southern states.

A great glacier which literally descended on the state from the Labrador highlands of Canada was the grinding agent. Some change in climatic conditions caused great masses of snowfall to accumulate in the Canadian peninsula and these snow piles gradually compacted into ice which then began to flow out at the edges because of its own weight, much as a mass of tar poured out on a board spreads at its edges. So great were the ice masses and so irresistible their flow that they eventually overspread practically the whole of New York State. Even the highest mountains of the Adirondacks were buried under thousands of feet thickness of ice. As the huge mass of the glacier front pressed forward and southward, it ripped and ploughed up the preexisting vegetation, scraped up and pushed in front and along with its snout all the loose soil material it encountered and then attacked the fresh bed-rock below, pulling loose great blocks of stone and grinding them up under its mass. This action probably continued for thousands of years, fresh ice masses coming from the north to take the place of those which had previously passed southward and been melted by the warmer climate even then prevailing in Pennsylvania and New Jersey. Eventually the climate moderated over the more northern sections and the ice front melted back, not suddenly, but gradually, with many oscillations of position due to partial readvances followed by further retreat. As the glacier melted back it deposited all the load of debris it had been carrying along, spreading it as a sheet of varying thickness over the surface of the unaltered bed-rock it had been grinding. Some of the mass was dropped directly by the ice, other portions of it were distributed widely by the water from the ice melting.

If bed-rock were all of one kind it would only be necessary next to consider the various ways in which these glacial deposits were accumulated and assorted in order to appreciate the varieties of soil to be found in the state. But as many kinds of solid rock contributed a portion to the deposits, these varieties and their location must be taken in account to make the story even partially complete.

From around Adirondack mountain mass at the apex of a triangle the flow of the ice across the state was divergent eastward and westward toward the base line of the state's southern boundary. The east side of the triangle along the Lake George, Lake Champlain and Hudson Valleys was nearly perpendicular to the base. The motion to the west was guided by a trough existing along the axis of Lake Ontario and this gave the flow.
a considerable turn from its generally southward advance. The direction of the striae made on the bed-rock and the alignment of the drumlins show, however, that after crossing the immediate northern area of the western side of the state there was a notable recurving southward of the ice movement. Thus at any given point the ice deposits may be expected to contain contributions of ground up bed-rock from all along the course of the ice flow extending northward. Nevertheless the bulk of the recognizable fragments in such deposits are found to be made up of material derived from formations occurring only short distances removed to the north, are in other words of local origin, and it may be suspected that the bulk of the finer fragments are also of this nature. There are several reasons why this should be the case. A long journey

would result in the grinding up of all but the most resistant and largest fragments, converting the smaller fragments into a mixture of clayey fineness. Moreover the deposits at any one point comprise material brought by the ice just before it melted back from that area and it will be readily appreciated that this should make the grist of the near-edge-grinding to the north preponderant in any particular

On the map Fig. 2 showing the various kinds of bed-rock underlying different parts of the state it will be noted that the Adirondack mountain mass is mostly made up of igneous and metamorphic rocks of granitic nature, that is, containing relatively large percentages of quartz. This is true also of the larger area to the north from which the ice came into New York State. As most sands are

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**GLACIAL FEATURES OF NEW YORK STATE**

LEGEND

- Moraine Bands
- Striation Directions
- Drumlin Occurrences
- Till Sheet and Minor Morainic Accumulations
- Lacustrine and Marine Deposits Predominate

**FIG. 1.**
made up of quartz particles, the glacial grinding of such rock might naturally be expected to produce a quite sandy soil, especially as the other minerals of granitic rock are less resistant to glacial grinding and could more readily be reduced by it to a fine powder and floated southward and perhaps out to sea by the water of ice melting.

The relatively infertile sand areas of the Adirondack region may, therefore, be directly attributed to the local bed rock origin of the material. Because the Adirondacks are high and projected far up into the ice they furnished a heavy load for ice-borne transportation, and, as granitic rock is furthermore one of the most resistant kinds, much Adirondack material appears in deposits quite remote from the mountains. Such material is especially conspicuous in the shape of the large "hard heads" so often encountered in the soil, as these are largely of Adirondack or Labradorian origin.

Another igneous, largely granitic area appears in the southeastern part of the state, but what may be termed the central basin of New York, has underlying it, alternating belts of limestone, shales and sandstones. It would require considerable space to consider in detail the influence of each of these rock types on the character of the soils of even typical areas. Therefore it must suffice to generalize to the effect that the limestones and more basic igneous rocks, particularly "trap" rock furnish better soil material by far than the sandstones and the shales. For the rest the reader may consider for himself, by inspection of Figs. 1 and 2, the probable admixture of soil material to be found at a particular locality and its expectable availability for agricultural purposes as determined by the nature of the bed rock from which it was derived. In this connection it must, however, be borne in mind that shales, especially, vary as to their lime and iron content and that these ingredients tend to increase the value of the soil, having in general a favorable effect on its physical properties and possibly also on its chemical adaptation to plant growth. Also that the shales tend to become more calcareous toward the west and sandy toward the east.

Another chief topic in the discussion of the origin and history of the New York State soils needs to be considered in even so brief an outline as this, and that is the varied nature of the deposits resulting from the ice invasion and the manner of their laying down. Probably the sheet of "till" deposited under the base of the ice and let down from the section above as the ice melted back continually is the most widespread of the glacial deposits. That part of it which was plastered on by the base of the ice is often notably compact due to the pressure of the ice above. It often frequently forms the "hard pan" layer commonly encountered below the top-soil. As the ice was thinner and moved less actively over the hill tops than in the valley bottoms the till sheet is also generally thinner on the higher lands, consequently upland soils are frequently shallow while those on slopes and lowlands commonly exhibit notable concentrations of glacial material. Post-glacial wash has also been a factor in removing the soil from the higher lands to the lower areas.

Where the ice retreat was stayed for a time along one line, because of equilibrium conditions between melting and advance, quite marked ridge-like accumulations developed; these are termed "moraines" and are typically stony in composition especially where relatively resistant rocks, granitic types or sandstones, underly the country immediately northward. Because made up of such stuff and because their topography is usually very rough and irregular moraines are commonly given over to pasture and wood lots. Again, in the north central part of the state the ice molded its deposits into a striking area of rounded hills ranging from a few feet to several hundred feet in height.
These hills have typically the shape of half submerged eggs floating on their sides with the blunt end facing the north and are termed "drumlins." Drumlin masses are usually formed of comparatively fine material and as their slopes are well drained the drumlins often make good farm lands when not too steep or high.

In addition to deposits made directly by the ice a vast amount of the material transported by the glacier was assorted and in many cases carried onward by waters, due to melting, flowing from the ice front. Probably nearly all the pre-glacial soil of the state was in this manner carried beyond its boundaries and much of it now rests in the ocean bottom or in stream valleys far to the southward. Deposits of glacially supplied materials, water transported by the floods from ice melting, have also a notable development in all those parts of New York state where the water shed slopes to the southward or away from one time positions of the ice front. Practically all the valleys of these areas are deeply filled with assorted layers of gravel, sand and clay of such origin and similar formations also cover wide expanses where the land is comparatively level. In general such accumulations are termed "outwash deposits"; where confined by valley walls they are specifically called "valley trains," where spread out widely, "outwash gravel aprons" or "glacial sand plains." From a soils' viewpoint the gradation in the coarseness of the material composing them, the finer the further removed from the point of outflow from the ice, is the most interesting feature of these...
water-laid accumulations. As the ice front retreated progressively northward the coarse deposits marking the head of one halt were often buried under finer stuff brought from the distant source of a later stand of the ice front.

When the ice had retreated so far that its front rested on north facing slopes a distinctly different set of conditions, affecting particularly the water-laid deposits, were initiated. From then on, for a long period, the water from ice melting and atmospheric precipitation was ponded between the ice barrier and the east-west-extending land divide that separates the north and south drainage slopes of the state. Consequently a number of temporary lakes began to form in each of the north sloping valleys whose individual levels rose until they overtopped the lowest point of the divide ridge for that particular region. These levels were at altitudes ranging between 1050 and 900 feet. Later, as the ice front continued to retreat the various lakes coalesced and expanded in area so that eventually nearly all the northern half of the state below such altitudes was for a greater or less time under lake waters. Since much sediment must have constantly been poured into them by the glacial streams it may be conceived that the lakes were quite turbid. The fine material in suspension must have been continually, if slowly, settling on the bottom. Consequently it is found that the bottom areas of the former lake expanses are veneered over (thickly or thinly according to the abundance of the supply) with deposits of fine grained "lake-clays," and the near-shore stretches are rimmed by sand and gravel deposits, marking the positions of the old beaches, sand bars and deltas on which the coarser materials brought by stream flow were deposited along the edges of the lakes. As the ice barrier retreated, lower outlets were uncovered both to the west and east. Then as the lake levels fell much of the material deposited on the portions of the bottoms covered by the higher levels was reworked by waves and currents. Consequently a considerable physical diversity exists in the soils having lake bottom origin. A further complexity in the soils of these areas is owing to the fact that moraines and till may be and were deposited under water directly from the ice as well as on land; and that the lake deposits probably represent a mingling of material from an even greater variety of bed-rock than the glacial accumulations on land, because of the various directions from which streams entered the lakes, and it becomes apparent that the resulting soils may vary greatly from point to point. Because water assorted, they do not, however, exhibit the great heterogeneity characteristic of land-accumulated glacial deposits.

Since the close of the glacial times, possibly 10,000 to 50,000 years ago, all these materials have been exposed to atmospheric action. While this is but a short time, geologically speaking, it has sufficed to bring about distinct changes. By frost action many of the larger rock masses brought by the ice have been split into finer fragments. The iron minerals in the fresh bed-rock material has in the topsoils been oxidized to yellow and red-brown substance. Other rock material has been made rotten and crumbly by the addition of water and due to losses from solution. Such changes are especially marked in the top-soil; the subsoil has often remained practically unaltered since the time when first deposited by glacial processes. The irregular dumping of materials by the ice very markedly interrupted the former drainage courses of the state so that numerous swampy tracts and shallow lake basins resulted. In many cases the growth and accumulation of organic material has filled or partially filled such depressions and this has

Continued on page 58.
THE SOILS OF NEW YORK STATE

ARTICLE NO. 2

By H. O. Buckman
Assistant Professor of Soil Technology, Cornell University

(EDITOR'S NOTE—This is the second of the series of New York State articles. The Series will be continued in the November issue.)

BEFORE the period which marked the great ice invasion of the northern United States a large part of the area so affected was covered with a deep mantle of residual soil. This soil had been formed in situ by the same forces which are so largely active at the present time such as water, wind, heat and cold, plants, animals, oxidation, hydration and solution. These during the vast geologic ages previous had gradually decayed the rocks, washed away their most soluble constituents and at the same time intermixed varying amounts of organic matter. Hence a soil was slowly evolved, varying in fertility according to climatic conditions and rock composition.

Moreover along our great Atlantic coast the ocean was not inactive and as it then occupied areas now raised above its surface thru the oscillations of our earth's crust, opportunity was offered for the deposition of materials. The streams were engaged as at the present in erosion and transportation and vast quantities of debris was spread out upon this shallow ocean bed, the coarser near the shore, the finer farther out and graded according to the distances carried. This marine soil is now of wide extent along our Eastern Coast and the area is designated as the Coastal Plain region. It occupies a small portion of New York State on Long Island. Because of the great washing that it has received not only by streams but by the ocean, it is greatly leached, is poor in humus and is largely represented by sands and sandy loams. There were also probably well developed in the State before the glaciation certain materials deposited by streams, designated as alluvial soils. These soils occupied narrow bands along the rivers and creeks and were probably deep and dark and of high fertility. Thus the original mantle covering our state could be divided under the three heads already designed, Residual, Marine, and Alluvial. Of the three the residual was the widest in extent and the most important.

With the gradual change in climate and the many advances and retreats of the ice, the topographical features of the state were altered, together with its soil. The old residual mantle with its well developed alluvial soils was either swept away and replaced with products derived directly from the ice and from the washing of the great torrents of water constantly gushing from its fronts, or mixed with the glacial products. A new soil was then born, not by slow stages as the residual or marine had been, but in almost a twinkling of an eye as computed in geologic time. This soil is not a homogeneous soil but quite variable as to texture and fertility. Part is of glacial till, part of glacial lake origin and part of heterogeneous birth. Moreover the character of the rock has had a large share in determining not only the type but the fertility thereof. For instance hard rocks have given rise to gravelly and sandy soils while limestone and shales upon glaciation have yielded clays, and silts. The composition of the rock has also been a factor. Rocks poor in lime have given soil poor in that constituent and vice-versa. In fact the normal fertility of New York soils is largely determined by the outcrops of limestone and the consequent presence of active calcium in the soils.

The ice in its greatest advance left a well marked terminal morain in
New York State as is seen by the glacial map. Below this morain is a V shaped area in the state where the original residual mantle still exists altho much altered by glacial wash. Also the marine soils still persist on Long Island, having been formed at least partially since the Glacial Epoch. The rest of the state is occupied by the marine, the glacial till, the glacial lake and the alluvial. The residual soil has sunk into insignificance as to area and the state is largely occupied by the last three groups all products of the ice invasion. It is very evident then that to clearly understand our soils a general insight into geologic changes particularly glacial geology is necessary. Such a presentation has been made in the previous paper and briefly touched upon herein.

These divisions presented above have been determined entirely by geologic research, but a careful study along lines more closely related to agriculture must be made that the general adaptibility of the various soils to crop growth can be determined. Such a study has been
inaugurated and is being prosecuted in this State. This study is designated as soil survey. It aims not only to bring about a subdivision of the groups above described, as is clearly necessary, but to map and describe the soils in addition. For convenience in naming and describing, soils are divided into what are called Series. All soils which have the same mode of origin, which come from the same kind of rock and which exhibit the same general color, drainage and lime characteristics are grouped together as a series. For instance all soils in the state arising from the till derived as Dunkirk Gravelly Loam or Volusia Silt Loam. To any person familiar with the geology of the State as related to the soils, these names throw a flood of light on the probable characteristic of the soil. A soil survey consists in the establishment, the mapping and the description of the series and types in any particular region.

From this brief introduction to the soils of New York State together with the data presented by the preceding paper regarding the general underlying geology, two points must be emphasized as of particular importance since they are to a great extent the determining factors in the fertility of our soils. In the first place the character of our soil is largely determined by the composition of the underlying rock, and secondly the general fertility of the soil is directly traceable to their lime content. As noted from the geologic map a great band of limestone outcrops across central New York State. It is here we find our richest soil together with certain isolated areas in other regions where the limestone is near the surface. The remaining soils then need lime. Of the two greatest needs of the soils of the State, drainage is first, while lime is second.
It is of course impossible in this brief sketch of New York conditions to discuss the soils in detail. Therefore a general soil map is given and a short description of the Series presented. A general idea of the soils is necessary before a detailed description of various types or areas such as will follow in later issues may be appreciated. It will be of value to compare during the following discussion the soils and geologic map and also to keep in mind the close relationship of below 1000 feet, and their topography is rolling and hilly. The two principal types are the silt loam and loam. The former occupying the higher elevations, is very poor, thin and likely to be underlaid by hardpan. The loam occurs lower down on the hills, is a deeper, richer soil with often gravelly deposits and sandy subsoils. Its drainage and humus content is better than the silt loam. The Volusia series improves from south, northward.

A TYPICAL VIEW OF THE VALLEY AND HILL SOILS OF NEW YORK STATE TAKEN IN WASHINGTON COUNTY NEAR MT. HEBREN.

soil fertility to the underlying rocks, especially limestone.

A DESCRIPTION OF THE SOIL SERIES OF NEW YORK STATE.

Volusia. This soil is from a glacial till formed by the grinding up of Catskill, Chemung and Portage shales. These soils are light brown to yellow or gray in color, low in lime and usually acid. The humus content is low, and drainage is defective. They occupy high elevations, not usually

Lackawanna. This series is exactly like the Volusia except that it is largely derived from Oneonta shale giving it a red to brown color. It is in general but little better than the corresponding Volusia types.

Dutchess. These soils are of glacial till from the foliated and metamorphosed rocks of the Hudson Valley. The color ranges from brown to yellow and gray. Humus is low and the soil needs lime. The drainage is poor. The till sheet is uneven in thickness and there is a tendency toward protrusion...
of strata due to folding. The thicker till gives rise to silt loam while the stony loam is mostly forest land and not fit for tillage. The topography is rolling and the elevation below 1000 feet.

**Gloucester.** These soils are of glacial till from the gneiss and schists of the Hudson Highlands. The color is grayish to blackish with a yellow subsoil, usually containing many stones and boulders. Some types contain large amounts of mica. The humus content is low and the soils need lime. Drainage is uneven. The topography is rough and hilly and the elevation from 800 to 2000 feet. The principal types are loam and sandy loam. The latter is light and leachy. The former is the better soil, but often needs drainage.

**Ontario.** This series is a glacial till and drumlin soil derived from the Medina, Clinton and Salina sandstone, limestone and shales of central New York. The color is a medium brown or blackish, and the humus content is above the average for this State. Lime is usually well supplied. Drainage is uneven while the elevation ranges from 500 to 1200 feet. The topography is hilly (dumplins) in the West but in the East the hills are gently rolling and the till sheet even. The principal types are loam and fine sandy loam. This series contains in general the best soils of the state.

**Mohawk.** This area contains a number of series due to the complicated geological history. The soils may be either a till, a glacial lake deposit or a reworked material of mixed origin. The soils vary in humus and lime content from good to poor. Drainage is uneven. The elevation ranges from 300 to 1000 feet. Topography is rolling near the river, but may become very rough in the uplands. Marginal glacial streams have had much to do with complication of the soils. The area is good agriculturally.

**Dunkirk.** This is a glacial lake soil, resulting from the wash from the Volusia to the south and the Ontario on the north. The better and more representative types lie to the northward. The color ranges from light brown to brown. The lime content is low and addition of lime usually aids crops. Drainage is only fair and humus content medium. The elevation ranges from 300 to 900 feet. The topography is undulating to flat, with a tendency to steepness to the southward of the area. The principal types are clay loam and sandy or gravelly loams. This is a good agricultural soil. The Dunkirk clay loam makes up a large part of the University Farm.

**Vergennes.** This soil is very similar to the Dunkirk in most respects. It is usually a darker soil and is not affected by the lime-bearing outcrops to such an extent as is central New York. Consequently it responds to lime altho certain areas within the series are plentifully supplied therewith. It circles the Adirondacks and grades into the Mohawk. In the regions of the Vergennes and Dunkirk occurs the Clyde, a dark colored, rich soil occupying the low and swampy areas of these series. When drained it is one of the best soils of the state.

**Chevango.** These soils are made up of gravelly and sand outwash occurring south of the water sheds of central New York, and are seen largely as river and valley terraces. They are low in lime, light in color, well drained but usually poor in organic matter.

**Hudson.** These soils are similar to Chenango, but occur along the Hudson River. They are glacial lake and stream terraces.

**Genesee.** The materials occurring in this series are the recent alluvial soils of the north inclined river valleys. They are rich, black soils and are very productive when well drained. They are best developed in the Genesee Valley and are our youngest soils. They are even now in process of formation.

*Continued on page 60.*
KING CORN
William P. Alexander,
Gloversville, N. Y.

HOW glorious it stands, the golden corn,
In spreading ranks and splendidly arrayed;
Great legions laughing wind and rain to scorn,
A mighty phalanx, stanch and unafraid.
A crown of beauty to its native land,
Big with the bounty of a monarch strong,
Whose treasure house will be unbarred ere long,
And who will squander with a lavish hand
More wealth than sea-borne argosies unlace,
Let tribute then to him, King Corn, be paid.
Bring home the king, with joy and loud acclaim
With all his legions of the bearded ear,
Sound trumpet, shout, with bosom all aflame,
And welcome him the monarch of the year!
IT was my privilege to be in Germany this past summer both before and after the declaration of war. I left Ithaca in April and went directly to Berlin where I remained most of the summer.

Berlin is a most delightful city. Its museums, art galleries and public parks all serve to make it a most pleasant place to spend the summer. It was my plan to spend most of the time in Berlin so as to come into close touch with the splendid genetic work of Dr. Baur and his associates. Fortunately the work planned was finished about a week before war was declared. From early summer until August we heard rumors of war. It seemed that war between the several powers would break before many years. This was not the feeling in Germany alone, but one heard it discussed in Denmark, Sweden, France and other countries. Altho these discussions were heard in various places it did not seem that the war would come so soon. Even a week before Germany and Russia were at war with each other it did not seem a reality.

The members of the Reichstag declared to each other that in one more week their vacation would begin.

The latter part of July a trip was made to Groningen, Holland. While there war was declared between Austria and Servia.

From Groningen I went to Bremen where I met Mrs. Love who sailed from New York July 18. We went immediately to Berlin to begin our sightseeing trip. It was planned to include southern Germany, Switzerland, France, Belgium, Holland and England in our itinerary. After two or three days in Berlin it began to look as tho Russia and Germany would soon be at war. In a few more days this was actually the case. Immediately traffic was stopped and the trains were used for the transportation of soldiers and supplies to the various posts. Many automobiles, trucks, and the like, were also used for this purpose.

The mobilization of the German army was a wonderful sight. Everything moved without confusion and with comparatively little excitement.
The marching of the regiments to the railroads was an inspiring sight. Each soldier was clad in a new field uniform. The German people are great lovers of flowers and the soldiers were much decorated with flowers and with wreaths on their bayonets. As they marched out the spirit displayed was wonderful, since they were singing patriotic songs. 

Altho the spirit displayed by the soldiers was wonderful, that shown by their wives, mothers and sweethearts seemed superhuman. One was struck by the horror of war. To think that out of the thousands who were marching away few were to return and that their stock is lost forever to the nation, is appalling. The lost list is so great in this war that Europe will never recover from it. It is possible to rebuild the beautiful buildings, replant the parks and beautify the streets, but it is impossible to restore the loss of the flower of the nation.

The call to arms was so well answered that men from every walk of life are now to the front fighting for their country. I noticed this fact especially because Dr. Baur, with whom I worked this summer, is among those now fighting. Dr. Baur had left Europe to sail for Java and later to the United States, where he was to deliver a course of lectures at the University of Wisconsin and later at Cornell. When he was about three days out he received a telegram calling him to service. He had not been heard from for three weeks at the time I left Germany and it is doubtful

Continued on page 50.

ONE OF THE MANY BEAUTIFUL PARKS IN BERLIN.
LAST SUMMER’S EXPERIENCES IN GERMANY

By E. G. Montgomery
Professor of Farm Crops, Cornell University

My principle purpose in going to Germany the past summer, was to study their agricultural methods as practiced on the farms and also to get in touch with what is being done at the agricultural colleges and experiment stations.

Most of my time, for the six weeks previous to the opening of the war, was spent at Halle and for three weeks after the war at Halle and Hanover.

Ordinary farm land suited to growing rye or sugar beets rents for about $20 an acre. It was estimated that the farmer spends an average of $10 to $12 an acre more for mineral fertilizers. Also all the straw is carefully saved and converted into manure to be returned to the land. The farmer, therefore, actually pays out some $30 an acre cash for his crop, in

BROWN SWISS OXEN ARE USED VERY EXTENSIVELY FOR FARM WORK IN CENTRAL GERMANY. NOTE METHOD OF PULLING FROM HEAD.

Halle is the center of the great grain growing district of Germany, the land being quite level and almost entirely devoted to the growing of rye, wheat, barley and sugar beets. Very little land is in meadows or pasture. They farms of this region are generally large, ranging in size from one thousand to five thousand acres. There are also many small holdings. The land is naturally fertile but is cultivated very intensively. This is indicated by the high price of rent.

The crops were very large this year and it was estimated that wheat and rye would make between fifty and sixty bushels to the acre, and barley about eighty.

In the details of farming, these...
German farmers are far ahead of the grain farmers in the United States. Ordinarily the large farms are run by a well trained manager, who in many cases is a graduate of one of the agricultural institutions in Germany. On one farm of five thousand acres that we visited, there were three or four of these managers, each having a different department. This farm also had its own sugar factory and conducted a large dairy. While the farmers are very skillful in producing large crops, they appear to be very much behind the rest of the world in the use of agricultural machinery. This seems to be due to the very large supply of very cheap labor. Men on the farm are paid 75c a day and board themselves, while the women are paid 50c to 60c a day. Probably more women are employed on the farm than men.

In the vicinity of Halle, at least three-fourths of the grain is still cut by hand, either with a scythe or cradle. The remaining portion is cut by machinery, sometimes a mowing machine being used, the grain afterwards gathered up and bound, or else a self rake reaper, such as we still see on small farms in the eastern United States but practically never seen in the grain growing sections. Occasionally a self binder is observed and these machines now seem to be coming in on the larger farms. Most of the farm machinery of German make is very heavy and looks to us quite clumsy. The universal farm wagon will weigh more than a ton, with permanent side boards at least two feet above a man's head. One never sees a modern hay rack, such as we have in America, but all the grain and hay is piled on these wagons. The load put on is small and all must be pitched far above a man's head. One very seldom sees a riding tool. If a hay rake, a plow or drill is used, the driver always walks.

Generally the people work in large groups and at harvest time you can see everywhere in the fields groups of from six to twenty. Each man mowing with a cradle is followed up by two women to bind the grain. Generally there would be three or four
cradlers and six to eight women in a group. Very seldom are laborers seen working alone. Even when a tool is used, such as a self binder, they usually arrange to have at least one or two extra men following along to assist. A grain drill takes about four people, one to drive, one to guide the drill with a lever, and two others to see that it is working all right.

One cannot understand why the German people, who are so progressive in many ways, have not been able to adopt modern farm machinery. I understand, however, that in the eastern part of Germany, around Posen, the use of machinery is very general and up-to-date.

When the war broke out the people were just in the midst of harvest and the fields were full of hands harvesting the grain, while teams and wagons were hauling it away and in many places, plows were running; the season between harvest and planting being so short that the land is often plowed before the grain is hauled off. However, declaration of war changed everything. On Sunday the declaration came and by daybreak on Monday morning the farm horses were coming in from everywhere and assembling at various centers. I went to the horse market at Halle about 10 o'clock Monday morning and saw hundreds of farm horses being examined by military officers. Practically all sound horses were taken. On Tuesday a trip to Leipsic and back was taken, and practically no horses were seen in the fields. This, however, did not stop all farm work as a large number of oxen were also used. Practically no men were seen in the fields but mostly women and children. Three days after the declaration of war these same farm horses had been equipped with new harness and saddlery and could be seen trundling heavy cannon and commissary wagons along the highways, in great military trains. Often a train of horses three abreast and a mile in length would pass by. The heavy Belgian horses, which are used on the large farms, were mostly assigned to the gun carriages and military wagons, while the light horses were assigned to cavalry. It was a marvellous thing to see all the men and horses, which on one day were straining every effort to care for the

Continued on page 62.
THE ART OF ACCOUNTING AS A FACTOR IN HOME ECONOMICS

By Edith C. Fleming
Home Economics Department, Cornell University

HOME Economics is not a new phase of education begun with the cooking schools of a half century ago, but is, in reality, as old as the home; for is not the word "economics" used by the great Greek, Xenophon, in reference to the household? Neither is the question of household accounting one of recent interest, though we might judge so after a consideration of the hundreds of books in the English language written upon other phases of household management. On the contrary, we are told that the sixteenth century marked the beginning of the present lack of interest in the systematic keeping of such records.

"Aristotle says that a domestic economy which does not join to the exterior talent for acquisition the interior one of managing and utilizing, and especially of calculating expenses so that they shall not exceed the receipts, is like the sieve or the bucket pierced with holes with which one tries to carry water. Early writers tell us that it was an important part of every woman's duty and of every young girl's education. "The Florentines," we are told, "were noted for their orderliness in the affairs of domestic economy." Many of the records kept by women of high rank in early English times are a curious combination of diary and expense account, of Latin words and, to a comparative-ly late period, of Roman numerals. The problem of obtaining a total or of "striking a balance" must have been a difficult one.

The following taken from Charles Waldo Haskins' book, "How to keep Household Accounts," is a record from the household book of the ducal family of Buckingham, and is written in the abbreviated Latin of the year 1507, the numbers being expressed in Roman letters. It records the expenditure at Newbury for "the dinner of the Lord with his household; dined, gentry, twenty; valets, fourteen; garçons, twenty-nine."

Die D'nica XXX
Panet. ex it'm ex empeon. xxxij
pan. p'c. xvj. ob.
Cellar. expend. it'm ex empeon.
ij pich. vini gasc. p'c. xvi.ç.
Buttill. exp. it'm ex empeon. xv
lag. cervis. p'cii iij. ix.ç.
Coquin. exp. it'm ex empcon. j qrt.
carn. boum p'cij iij. iij.ç.
vitul. p'c. ij. viij.ç.
Achates ex in ijbç porcellis xij.
ij capon xiiij.ç. ij cunicits xvj.ç.
j curlew. v. ix redshankes vj.ç.
v. disc. butir v. ovis gallin.
iij.ç. herbis et farin. aven ij.ç.
Aul. & Camer. ex. de fagottes
xxvijij. p'cij iij. iij.ç.
(Translation)
Sunday, 30th January.
Pantry, Spent, from purchase there
33 loaves price 16½d.
Cellar, Spent, from purchase there,
2 pitchers of Gascony wine price 16d.
Buttery, Spent, from purchase there
15 flagons of ale price 35 9d.
Kitchen, Spent, from purchase there,
one quarter of beef, Price 4s 4d, veal
price 2s 8d.
Fresh Provisions, Spent for two
pigs, 12d, two capons 14d., 2 rabbits,
16d, 1 curlew, 5d, 9 red shanks 6d, 5
dishes of butter 5d, eggs 4d, herbs
and oat meal 2d.
Hall and Chamber, Spent, 28 fagots
price 2s 4d.
A story is told of the records of a humble shopkeeper who was taken ill, and whose son came to carry on the business. He found all her accounts written in chalk on the back of the shop door, and when he needed
to refer to them he unfastened the door and carried it to his mother's bedside that she might translate the many strange markings. In a fit of desperation one day he painted out the whole account, and when his mother recovered she found that his impatience had cost her many pounds.

All this systematic care, however, began to disappear in the early part of the seventeenth century when, we read, certain French ladies "left their servants' accounts unaudited that they might preach the doctrines of grace." Sir Matthew Hale writes about the same time of the distaste for such matters shown by young English women, and of their consequent extravagance, and bitterly remarks that "it is no wonder that great portions are expected with them, for their portions are commonly all their value." The Dutch on the other hand, had a maxim that "no one is ever ruined who keeps good accounts."

In the following century an English writer urged that children have the management of money and that girls ought to keep the family accounts. Mrs. Ellis, a noted author of Queen Victoria's reign, speaks in no uncertain terms to the effect that "married women who love justice to themselves as well as to others should always keep strict accounts." American writers of note take the same attitude. Miss Catherine Beecher, one of the foremost educators of the early days of colleges for women, in the latter part of the nineteenth century, outlined a plan for the recording of household accounts with suitable subdivisions. Her opinion is best expressed in her own words: "Young ladies also should learn systematic economy in expenses, and it will be a great benefit for every young girl of twelve or thirteen years of age to make her own purchases and keep her accounts, under the guidance of her mother or some other friend. . . How strange it appears that so many young ladies take charge of a husband's establishment without having had either instruction or experience in one of the most important duties of her station." "How few," she says, "keep any accounts at all of their current expenses." The same remark applies to the present—the beginning of the twentieth century—and we have not far to look for a reason for such a condition. Women generally have not been educated in this particular phase of household management, and in but a few schools and colleges at the present time is the subject included in the curriculum. Many women consider all accounts a necessary part of a man's education, but the value of such work for themselves they think scarcely worth the expenditure of the requisite time and patience. The question is not, however, one of man's ability versus that of woman, but rather a matter of education, for is it not well known that men not engaged in commerce are often as careless as women in such matters? Only too frequently a good resolution to keep an accurate account ends, in a month or less, with the remark that the family was no richer and no poorer at the end of that time, and that expenses were always as small as possible. Such a trial is little better than none, for the whole object of keeping the account—that of comparison—is evaded. Without a systematic record from year to year, a thorough grasp of the financial situation in the household is difficult, if not quite impossible.

For the purposes of a college course in Home Economics, accounts may be divided into three classes, namely—personal, household and institutional, the first paving the way for the other two. The requisites for personal accounts—neatness, accuracy, and comprehensiveness—are important factors in all household affairs, and the student who gains these in her college course or before it, will be master of many situations, apparently far removed from the subject under discussion.

Continued on page 60.
CONFERENCE OF HIGH SCHOOL TEACHERS OF AGRICULTURE

By A. Kendall Getman, '11

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DURING the week of July 13th, a meeting of the New York State high school teachers of Agriculture was held at the State College of Agriculture. The Specialist in Agricultural Education from the State Education Department and representatives from the departments of the College concerned in the high school curriculum were present. With the development of high school Agriculture there have arisen many problems, the solution of which depends upon a concrete attack by these three agencies. Accordingly the program was arranged so that at the close of every lecture there was an opportunity for open discussion. The underlying idea in each of the lectures was the principle lines of effort in that particular field. Several afternoons of the week were left open so that the teachers might acquaint themselves with the activities of the college and participate in private conferences with professors concerning special problems. The program follows:

Monday, July 13
Plans for 1914-15 — L. S. Hawkins
Balkan Wars — Pres. J. G. Schurman

Tuesday, July 14
Plant Pathology — Prof. M. F. Barrus
Forestry — — — — Prof. S. N. Spring
Pomology — — — — Prof. C. S. Wilson
Rural Education — — — — Prof. G. A. Works

Wednesday, July 15
Soils — — — — — — — — Prof. E. O. Fippin
Farm Crops — — — — — — Prof. J. L. Stone
Folk Song Recital — — — — Mrs. Rose Morgan

Thursday, July 16
Poultry Husbandry — — — — Prof. J. E. Rice
Farm Mechanics — — — — — — Prof. H. W. Riley

Friday, July 17
Farm Management — — — — — — Prof. K. C. Livermore
The Farm Bureau — — — — — — Prof. M. C. Burritt
Extension Work — — — — — — — — Prof. Royal Gilkey
Conference of teachers and professors to discuss course of study.

Saturday, July 18
Animal Husbandry — — — — — — Prof. H. H. Wing
Dairy Industry — — — — — — — — — — Prof. H. E. Ross

Instructural duties in the summer school made it impossible for the writer to attend all of the sessions. However, a few of the most helpful thoughts emphasized by the speakers are here included.

Supervisor Hawkins clearly defined the policy of the Department of Education regarding the establishment of schools and the type of work expected in such state aided institutions. Every student who registers in an Agricultural course is expected to conduct a home project which should be an outgrowth of the year's study of a subject and a correlation of both theoretical and practical phases of the work. The teachers were asked to consider the question of curricula for the schools and to report the same at the Friday afternoon conference.

Prof. C. S. Wilson, in an address on Pomology, expressed an apprehension that the high school teachers are endeavoring to cover too much subject matter. He also emphasized the fact that high school Pomology should be quite distinct from that subject as it is taught in college. Teachers are prone to assume a great many facts found in references that have not been experimentally proven. The teacher has at his command a sufficient number of fundamental principles without resorting to college technology. Comparisons were made of the courses of study now in operation in Minnesota, Michigan and Indiana which, to the speaker's mind covered too much subject matter to be of practical value in the high school. A suggested outline of topics for Principles of Fruit Growing was then presented. The stressing of topics gave expression to the thought that a few principles well taught are of much greater value than an attempt to wander over the entire field of Pomology.
Prof. G. A. Works of the new department of Agricultural Education discussed the status of high school Agriculture in Wisconsin and Minnesota. Schools in the west are state aided to a greater extent than in the east, yet the home project idea has not been developed to so great a degree. Weaknesses in the western systems were pointed out and attention called to the fact that New York teachers could profit by these mistakes. A chief criticism of many of the western schools of Agriculture seemed to be the lack of a reason why such a course was given.

Important thoughts manifested in the address given by Prof. Fippin were, to some extent, parallel to those mentioned by Prof. Wilson. Care should be taken to keep the technical and research phases of Soils out of the high school. No attempt should be made, as is too often the case, to present a diluted form of college courses in Soils. No opportunity should be lost in making use of field conditions to establish fundamental principles. The logical method of presentation should be from the general to the specific.

The subject of Farm Crops lends itself exceptionally well to the development of home project work. Prof. J. L. Stone gave many helpful and timely suggestions regarding phases of the subject that are best adapted to this kind of work. The speaker also made special reference to crop extension among the farmers of the community, stating that the teachers of Agriculture should take no small part in this movement.

The field of Poultry, as discussed by Prof. Rice, is especially adapted to high school conditions because of the rapidity with which results are obtained. There is no easier and more effective way of training a high school boy to realize his sense of responsibility than by practical poultry work. A large part of the educational value of the subject lies in the fact that the boy learns to do by doing. The correlation of poultry with the other high school subjects is very striking.

An important thought brought out in the discussion presented by the Animal Husbandry Department was the high pedagogical value of requiring a boy to do a piece of work at a definite time. The testing of the dairy herd is a most efficient means of attaining this end.

By means of a demonstration Prof. Ross illustrated the many ways in which Dairying may be correlated with the every day life of the boy. During the discussion it was manifested that a knowledge of Chemistry is very essential to the study of Dairying.

Although the suggestions given in the lectures were most valuable, the benefits from the conference did not stop here. Before and after lectures and at other times during the day groups of men could be seen earnestly discussing their troubles. This opportunity to exchange plans and methods of work was appreciated by many.

All of the speakers mentioned the willingness of the various departments to cooperate with the teachers of Agriculture in every possible way. The furnishing of laboratory material and supplies, lists of references and College publications were especially mentioned.

A short business meeting followed the conference on Friday afternoon, at which provisions were made for the appointment of committees for the courses of study. The personnel of these committees will be placed before the teachers at a later date. Resolutions were adopted and tendered to the College of Agriculture for its assistance and hospitality and to Prof. A. R. Mann for his efforts in arranging the program and place of meeting. It was unanimously voted to hold the conference next summer at the State College of Agriculture at approximately the same date. In accordance with this vote a committee to arrange

Continued on page 52.
In his “Greeting” to the students, Dr. Galloway speaks of the College of Agriculture as a “tree of knowledge,” and adds that it is well started on the road to become the “monarch of the forest.” In other words, this College of Agriculture has been developing into one of the leading agricultural colleges of the country. Such a position is to be gained and maintained only thru cooperative work and untiring efforts of the faculty, headed by Dr. Galloway, the Alumni, and the present students—all three backed by the people of the State. As to the State’s giving its heartiest support there can be no question, for all the new buildings and generous appropriations are ample proof of this. In the very few months as Director of this College, Dr. Galloway has proved himself to be the man for the place. Already the effects of his ability and energy to accomplish things quickly have been felt. The COUNTRYMAN has him to thank for much larger and improved quarters to work in this year. With a man of recognized ability at the helm, assisted as he is by an able staff of co-workers, the College must continue to progress.

The Faculty of this College cannot be surpassed, and we students who have had the opportunity of associating with the various members of this faculty are truly happy that we came to Cornell.

With the executive, educational and investigative divisions so efficiently developed, much remains for the students, both former and present, to accomplish. The former students have been very successful in their various paths of life, and this alone has been of inestimable value to the College by proving the true value of the institution to the people. But these former students can do more for their College. The Students’ Association was organized, with a resident and a non-resident division, to supply a bond that shall unite all resident and former students of the College, to advance the interests of the college, and to promote country life interests at large. To speak frankly, this organization is not supported as it ought to be, for, out of six thousand names on the college roll, only six and one-half percent are paid-up subscribers of their association. With such a small enrollment, can you, Mr. Former Student, expect the Association to work to the best advantage? Your Association needs you as a member, therefore do not delay, but join at once. The membership fee is $2, with an annual fee of $1. Let us strive to have the association membership contain one hundred percent of the college enrollment.
The present students owe an equally great duty to the College. It is well recognized that a man receives much or little from a college career in accordance with what he puts into it. We recognize that our university work comes first, but by making good use of all our time, we can devote some of our energies to such student activities as benefit both ourselves and the University and College. Any organization that really benefits the students will benefit the College. To be specific, what are some of the tasks for the coming year? First, the Honor System, which received such an impetus last spring, must not be allowed to wane. A precedent should be established that will give the system a rock-bottom foundation and such a foothold that in time the ideal condition will be reached when no committee will be necessary. But until such a time comes, students who cheat must be disposed of, for they lower the value of our diplomas and are not to be tolerated. Next, the Student Hour, which is to be inaugurated this year, should receive our heartiest support, for here is an opportunity for great good to the general student body. Similarly, to all the work that is carried on for the promotion of the work of the institution, such as Farmers' Week, we should give our heartiest support.

To what end is all this effort? Just this: it all works back to the land, to the improvement of agriculture, the backbone industry of the country, and to making the Empire State of which we are so proud, the leading agricultural State of the Union.

Another year has rolled around, bringing in its wake many changes. The College has presented to the State another class of young men and women, who will add their efforts to the bettering of agriculture, and the places of these students in College have been taken by others. To balance, new students are entering from all corners of the globe. To all these students The COUNTRYMAN extends a hearty welcome. Let the freshmen know that Cornell is glad to have them here; let them know that we older students want them to call on us for assistance whenever desired, and we will be glad to help them; and, lastly, let them realize that they have come to one of the greatest universities in the country, an institution of endless opportunities, if they will only recognize them.

The prospects of The COUNTRYMAN are bright with promises of material that will be invaluable to every student of this College, both present and former, and to every one who is in the least interested in agriculture. Extensive plans have been laid down, which point to one of the most successful years in the history of The COUNTRYMAN. The plans include several special numbers which, as far as possible, will cover all phases of the subject under consideration. Thus we will present the horticultural, poultry, Farmers' Week, and rural education numbers, besides the general numbers. But the best of all will come in December, when the historical number will make its appearance. This issue will trace the history of the College of Agriculture and bring to light very interesting features of the early development of the College, about which the students of to-day know nothing. No one who has been to this College can afford to miss this number.
The former students will see more notes about their fellow students than heretofore; our women readers will have something especially for them every month; and, beginning with the November issue, the high school boys and girls will find a department devoted to their interests. There will appear in our columns data on experiments that have never before been published. Also, the reader will have the opportunity of studying a series of articles dealing with the agriculture of New York State.

In order to serve its readers to the best advantage, The COUNTRYMAN will welcome suggestions at any time. If you see a way in which you think the magazine can be improved, share your ideas with us.

A Chinese philosopher once made the following statement, "The well-being of a people is like a tree; agriculture is its roots, manufacture and commerce are its branches and its leaves. If the root is injured, the leaves fall away, the branches break and the tree dies." How admirably this covers the situation in the Empire State. Without a doubt agriculture is the leading industry of the State, for New York has to its credit a comparatively large proportion of the crops raised in the United States. Comparing the estimates of the United States Bureau of Crop Estimates of September 1st for the United States and for New York State, one finds that New York has raised this year 1 percent of the corn, 1 percent of the barley, 3 1/2 percent of the oats, 5 percent of the rye, 38 percent of the buckwheat, 8 percent of the hay, 11 percent of the potatoes, and 19 percent of the apples of the United States. When one considers that there are forty-eight States in the Union, these are indeed very favorable figures. They also show the diversity of crops in the State.

Realizing this, The COUNTRYMAN is going to run throughout the year a series of articles, such as no other magazine, to our knowledge, has ever attempted, dealing with the agriculture of New York State. The series is intended to acquaint the people with the agricultural conditions and possibilities of their State. To do this most completely and satisfactorily, we must come down to the basic principles of agriculture—the soil and the climate. As the fertility of a soil depends upon the geological conditions that determined the formation of the soil, the first article discusses the geology of the State. This is followed by a description of the soil series. It is a well recognized fact that the prosperity of the farmer depends primarily on his soil—the climate, markets, and other factors being also important. If the farmer has a poor soil he surely is greatly handicapped.

The article on soils will be followed by a description of the climate of the State and by a discussion of the types of farming and regions of New York. These first four articles are of a necessity very general, and are calculated to give an idea of agriculture in the State as a whole. After these will come articles pointing out in detail the soils, crops, stock, and the like, of the various regions.

The articles are written by men who are recognized authorities, and therefore the series will be of real worth. We advise all our readers to study each article carefully, so as to get its full intrinsic value.
Dr. Beverly T. Galloway, our new Director, took up his work here on August 1. Dr. Galloway was born in Millersburg, Missouri, on October 16, 1863. During his early childhood his especially interested in horticulture and gave his principle attention to floriculture. The year after he graduated he was given the work of collecting agricultural, botanical and other material for the New Orleans Exposition. He spent that winter, parents moved to Columbia, Missouri, where he was educated. He received the degree of B. Agr. Sc. from the University of Missouri in 1884 and in 1902, the degree LL. D. was conferred upon him.

While at college Dr. Galloway was 1884–1885, at the Exposition and at its close returned to Columbia where he devoted himself to the study of plant pathology.

In 1887 Dr. Galloway was appointed to the position of Assistant Pathologist in the Section of Vegetable Pathology
of the United States Department of Agriculture. One year later he was raised to Chief of that section, and about that time the name of the office was changed to that of Division of Vegetable Pathology, then later to the Division of Vegetable Physiology and Pathology. He continued as Chief of the Division until 1900. Then at the time when the entire Department of Agriculture was reorganized he was appointed as first chief of one of the four large divisions, that of the Bureau of Plant Industry. He remained in charge of this until 1913 when he was appointed Assistant Secretary of Agriculture, which office he leaves to come to Cornell.

He is a Fellow of the American Association for the Advancement of Science and the author of a number of works on horticulture, botany and plant diseases.

Dr. Emerson, who comes here to take the place vacated by Dr. Webber in the Department of Plant Breeding, was, until recently, Professor of Botany at the University of Nebraska. It was there he received both his B.S. and M.S. degrees. His doctor's degree was earned at Harvard.

Dr. Emerson has published many scientific papers dealing with the subject of genetics which stand very high both in this country and Europe. Indeed in Europe they regard his papers on genetics as the best American publications upon that subject.

He is, therefore, both because of his scientific training and congenial personality, especially fitted to fill this position as the head of the Plant Breeding Department. He is a mem-

NEW ANIMAL
HUSBANDRY BUILDING

NEW STOCK
JUDGING
PAVILION

BER of the American Naturalist Association and the American Society of Horticulturists.

The New York State College of Agriculture has been very fortunate in obtaining, for the head of the Department of Rural Education Professor George A. Works who entered upon his duties on July 1.

Professor Works is especially fitted for this work because of the nature of his early life education and experience. Born on a dairy farm at Augusta,
Wis., in 1887 he obtained his early education in a country school, graduating later from the high school at Augusta. He next attended the State Normal School at River Falls and finished there in 1898. For four years he was principal of the grades and high school in a small city. Prof. Works received the degree of Bachelor of Philosophy in Education from the University of Wisconsin in 1904. After teaching several years in various positions he attended the College of Agriculture at the University of Wisconsin, where he received the degree of Bachelor of Agricultural Science.

Mr. Hosmer took a position in the Bureau of Soils of the United States Department of Agriculture in 1896, but later entered the Bureau of Forestry. Studying forestry while on a furlough at Yale Forest School where he also instructed, he received, in 1902, the degree of Master of Forestry. In 1904 he was appointed Superintendent of Forestry in the territory of Hawaii. Here he organized the Foresters' division and systematized the Forest service there. Professor

gree M.S. in Agr. He then continued his teaching in Agricultural Education until the fall of 1913 when he went to the University of Minnesota to be Assistant Professor of Agricultural Education. From Minnesota Professor Works comes here. He will begin his work with an organization of courses in rural education for university students.

Ralph Sheldon Hosmer has been appointed to succeed Prof. Mulford who goes to the University of California.

He was born in 1874 at Deerfield, Mass., and was educated at the Boston Latin School and at Harvard

Hosmer has been closely associated with educational work while in Hawaii, where he has held the position of Vice-President of the Board of Regents of the College of Hawaii. Professor Hosmer is a member of the Society of American Foresters as well as several scientific societies, several state forestry associations, the American Forestry Association and the National Conservation Association. He is expected to take up his work at Cornell this month.

Among the members of the faculty who have been appointed to full professorships for the coming year are:

W. C. Baker. Drawing

Continued on page 56.
FORMER STUDENT NOTES

C. W. Mann

'06, B.S.A.—C. W. Mann is achieving excellent results in investigational work in the Bureau of Plant Industry, U. S. D. A. When Mr. Mann left Cornell in 1906, after serving here as a student assistant in the Soils Department, he took a position in the United States Bureau of Soils. He remained here for three years, working in New York, Virginia, Mississippi, South Dakota, Wyoming and Oregon. Resigning his position, he returned to Cornell and registered as a graduate student. But he stayed here only three months for he received an excellent appointment as an investigator under G. Harold Powell of the Bureau of Plant Industry. Since then he has been working mostly in California, carrying on Fruit Transportation Investigations, particularly in regard to oranges, lemons, grapes and apples. Last spring he spent about three weeks in Porto Rico investigating diseases of bananas in transportation.

'01, B.S.A., '05, M.S.A.—Ralph Wright Curtis, was born in Burlington, Wis., in 1878. He was graduated from the Oberlin, Ohio, high school in 1896 and entered the following fall as a freshman in the College of Agriculture with his home address as Beloit, Ala. As he was absent for a year Mr. Curtis did not receive his B.S.A. degree until 1901. Immediately after graduation, he went south into Florida to grow early vegetables. He returned to Cornell in the fall of 1903 and registered for a Master's degree which was given him in 1905. For this degree he specialized in botany with particular reference to the winter characters of trees.

Following a year as assistant in nature study in the College of Agriculture, he left Ithaca, to assume duties as Assistant Superintendent of the Boston Park System. This position he held until 1909 when he resigned to accept an appointment as Assistant Superintendent of the Arnold Arboretum at Jamaica Plains, Mass. Work at the Arboretum was found to be productive of matrimony for on Sept. 3, 1910, he was married to Miss Allie Myrtle Pettigrew of Jamaica Plains. He continued his work at the Arboretum until last summer when he was appointed Assistant Professor of Landscape Design and accordingly left for Ithaca in September, 1913, after an absence of several years.

Active in undergraduate affairs Professor Curtis was the first Alumni Notes Editor of THE CORNELL COUNTRymAN and was the first one to organize and list the names of the alumni of the Agricultural College so that they could be available in publishing former student notes. He is a member of Alpha Zeta and Gamma Alpha fraternities.

In Professor Curtis the College of Agriculture has one of its most competent professors, for his wide experience and his demonstrated ability make him well fitted to fill his present professorship. His work at the Arnold Arbo-
The Cornell Countryman

return under Mr. Sargent, the superintendent, was of an especially high quality and for this reason he will have entire charge of the design in planting in his department.

The department of Landscape Art has grown so much in the last few years that it was given new and larger quarters last fall. This, together with the addition of men of the calibre of Professor Curtis, promises to give the department a still greater impetus.

'02, M.A., '04, Ph.D.—Dr. F. W. Foxworthy is Professor of Forestry in the University of the Philippines, located at Los Banos. He had an active part in the recent Philippine Exposition. At present he is working upon a Dendrological Manual of the region.

'02-'04, Grad.—Professor Herbert H. Whetzel, of the Department of Plant Pathology, was married on June 10, 1914, to Miss Bertha A. Baker in London, England. Professor Whetzel has been on a leave of absence since July 1, 1913, and will resume his work at the opening of the fall term. He has spent all of his absence in study abroad.

'06, B.S.A.—On September 3rd, G. W. Tailby, Jr., was married to Miss Eloise L. Osmond, daughter of Mrs. Elvira L. Osmond, of Cortland, N. Y. Tailby is Instructor in the Department of Animal Husbandry and Superintendent of Live Stock at Cornell. Mr. and Mrs. Tailby are now at home at 969 E. State Street, Ithaca, N. Y.

'07, B.S.A.—W. J. Morse whose address is care of Forage Crops Investigations, Bureau of Plant Industry, Department of Agriculture, Washington, D. C., visited Ithaca, accompanied by his wife, on Sept. 8 and 9. Mr. Morse is particularly interested in cooperative tests of cow peas and visited Ithaca on his tour of inspection of various stations at which the tests are being made.

'08, B.S.A.—Professor Vaughan MacCaughey, who has charge of the Extension Department of the College of Hawaii, was on the mainland during the summer, on an extensive teaching and lecturing tour. In addition to six week's teaching at the Chautauqua Institute, New York, Professor MacCaughey delivered a series of lectures on agricultural education at a number of western Normal Schools, including some in New Mexico and Missouri.

He was authorized by the Board of Regents of the College of Hawaii to make investigations of recent progress in extension enterprises and in carrying on this work, he visited the Universities of California, Missouri, Iowa, Chicago, Illinois, Wisconsin, Ohio, Columbia and Cornell. He was in Ithaca for several days in July.

'08, W.C.—It is always very pleasant to learn of a fellow Ag. student who is making good on the farm. John C. White, of Sagaponack, New York, is to be congratulated for his success. Returning to his farm immediately after finishing the short course at Cornell, he started in general farming. This year he has 40 acres of potatoes, 10 acres of corn, and has raised enough hay and grain to feed his stock and sell some besides. He is also raising 7 acres of potatoes and 3 acres of corn for a city man who owns a summer home nearby. His stock consists of seven horses and two cows. To carry on his business to best advantage, he has fully equipped his farm with modern implements. Realizing that "all work and no play makes Jack a dull boy," he has just purchased an automobile for recreation.

'09, B.S.A.—Cornelius Morris Bennett was married to Miss Ethel Brodie, daughter of Mr. and Mrs. Harry C. Brodie, at Portage, Wis., on June 23.
Their home will be in Washington, D. C. Bennett is assistant agriculturist in the Office of Farm Management of the U. S. Department of Agriculture.

'09, B.S.A.—K. C. Livermore, Professor of Farm Management at Cornell, was united in marriage a few weeks ago to Miss Madeline Avery of Taghkanick, N. Y.

'09, B.S.A.—Victor I. Safro, formerly of the U. S. Bureau of Entomology and the Oregon Agricultural College, has been appointed entomologist of the Kentucky Tobacco Product Company, of Louisville, Kentucky.

'10, Ph.D.—Dr. E. P. Humbert visited Ithaca in August. He is Professor of Agriculture in the New Mexico Agricultural College.

'11, M.S.A.—O. W. Dynes, until this term the head of the Agronomy Department at the North Dakota College of Agriculture, is returning to Cornell as Instructor in the Department of Farm Crops. While in North Dakota Mr. Dynes had charge of the instructional and some of the investigational work of the college.

'11, B.S.A., '14, B.S.—R. A. Mordoff was married on August 4th to Miss Laura Fish at Hamburg, N. Y. Mr. Mordoff is Assistant Registrar of the College of Agriculture. The young couple are residing at Forest Home, Ithaca, N. Y.

'11, B.S.A.—Professor Arthur Lee Thompson, of the Department of Farm Management, was married on Tuesday evening, June 23, to Florence Ruth Leland, daughter of Mr. and Mrs. Charles E. Leland, 27 Ninth St., N.E., Washington, D. C. They are making their home at 422 Eddy St., Ithaca.

'12, B.S.A.—N. C. Auchter, an Instructor in the Department of Horticulture, West Virginia Agricultural College, was married on August 25 to Miss Catherine E. Beaumont. Miss Beaumont is the daughter of Mr. and Mrs. P. J. Beaumont, of Morgantown, W. Va.

'12, B.S.A.—Announcement has been made of the marriage of Edward Lewis Markell and Miss Genevieve J. Williams, of Brooklyn, N. Y. Markell is a pomologist with the U. S. Department of Agriculture. The wedding took place in September.

'12, B.S.—F. A. C. Smith has been managing the Farm Bureau in Allegheny County, where he is doing some excellent work. The organization of this county is unique among the organizations of the State because of the fact that it was started so recently that no financial assistance was secured from outside agencies excepting the farmers themselves in the organization.

'12, B.S., '12, A.B.—Lloyd Ivan Snodgrass was married on June 30 to Lillian Louise Teller in the Presbyterian Church at Unadilla, N. Y. S. Jay Teller '06, brother of the bride, was one of the ushers. Mr. and Mrs. Snodgrass have been spending the summer at Lake Keuka, N. Y., and after September 1st will be at home at Vineland, N. J. Mr. Snodgrass will teach science and have charge of the agricultural department at the Vineland High School.

'12, Sp.—DeForest Ludwig is managing the E. C. Ludwig Floral Co., of Pittsburgh, Penn. He has charge of two retail stores, an 85 acre flower farm and has 30 men under his management.

'13, B.S.—Blanche A. Corwin has accepted a position with the welfare department of the Carnegie Steel Co., and also has charge of the children's gardens in the city of Duquesne, Pa.

'13, B.S.—A. C. Coutant recently delivered a series of lectures at Lake George, N. Y., on the relation of the house fly to disease.
'13, B.S., '14, M.S.A.—C. E. Dimon, who has been instructing in the Department of Vegetable Gardening during the past year, is now located on his father's farm at Southampton, Long Island. Potato growing and dairying will be his specialties.

'13, Sp.—L. D. Cleare of Georgetown, British Guiana, who has spent the past year in special work in the Department of Entomology has been forced to return to his home on account of his health. Mr. Cleare is connected with the Department of Agriculture of British Guiana and hopes to be able to resume his work soon after his return.

'12-'14, Sp.—Mr. C. L. Mason, graduate of Shaftsbury, England, who, as Carnegie Fellow in Entomology has been doing special work at Cornell, has returned to England and will soon take up entomological work in the tropics.

'13, M.S.A.—F. B. Hutcheson has resigned his position in the University of Minnesota, where he had charge of the breeding experiments in cereals, to become head of the Department of Agriculture of the Virginia Polytechnic Institute. Professor Hutcheson was married in June to Miss Stockard. Miss Stockard is the sister of Doctor Stockard of the Cornell Medical College in New York City.

'13, M.S.A.—W. O. Whitcomb was united in wedlock on August 15th to Miss A. M. Hess, of Joliet, Ill. Mr. Whitcomb is doing excellent work at the Montana Agricultural College for he has just been promoted to the position of Assistant Professor of Agriculture.

'13, B.S.—Among the many Cornellians who have recognized this year that summer is the time for matrimony, is O. B. Kent, an instructor in the Poultry Department. In August he married Miss J. Chapman, a graduate of Oberlin.

'14, Grad.—Professor George Livingston, of Ohio State University, who took graduate work in the Department of Plant Breeding last year, spent the summer studying at the University of Halle, Germany. He has now returned to Ohio to assume his duties as Assistant Professor of Field Crops.

'14, Grad.—T. H. Reisner, who took the Graduate work at Cornell to better fit himself to take charge of the Agricultural work at the University of Nanking. In addition to qualifying Mr. Reisner for this work, Cornell also furnished him with a companion for life in the person of Miss Bertha Betts, another of our last year’s graduate students, to whom he was married during the summer. Mr. and Mrs. Reisner leave for the Far East in the latter part of September.

'14, Grad.—F. W. Pettey, who was until this spring an assistant in the Department of Entomology in the College of Agriculture, but is now government entomologist at Elsenburg College, Cape Province, Cape Colony, writes to a friend in Ithaca that there are bugs everywhere in the "Switzerland of Africa," where he is now located.

He makes no mention of the war. The Department of Entomology on the Hill has been wondering whether the European situation would affect the Cornell men who are in Africa as government entomologists, there being quite a number at present. Evidently when Pettey wrote, the war had not assumed any importance in the colony.

The work in the government college where Mr. Pettey now is, is really pioneer work in entomology, he having been sent by the English government to build up the department. Pettey writes that an insectary will be built, a library established and entomological instruments secured as soon as possible. Besides the research work
that he is doing for himself, the economic side comes in, because of the many insects that are destroying crops in that region. The college, Mr. Pettey writes in glee, boasts of seven co-eds.

'14, B.S.—The following letter was received from J. L. Buck. We wish to call special attention to this letter as it is the kind which we are anxious to receive from all the former students.

Mr. E. C. Heinsohn,
Ithaca, N. Y.
My dear Mr. Heinsohn:

"Mr. Hill has asked me to write an account of my work and send it to you for the CORNELL COUNTRYMAN. I left Cornell last February after having registered for the Second Term, for the purpose of taking this particular position (having been able to get my degree at that time). The New Hampton Farms are owned by the Department of Correction of the City of New York and are being used as a Reformatory Farm and School for Male Misdemeanants between the ages of 16 and 30. Most of those on the Farm are between 18 and 26, or the age of College fellows, and are up for theft, assault, disorderly conduct, also use of drugs and the like. Drink and drugs are the causes, directly or indirectly, for most of them being here.

"The Superintendent of the Farm is Mr. Robert Rosenbluth, formerly Chief Investigator of Forests for the N. Y. Conservation Commission. There are four assistants, or Agricultural Instructors as we are officially known. While each of us has his own department on the farm to look after, still we are not confined to that as we help out wherever necessary. I have charge of the poultry, fruit and hay. Our Instruction is mostly practical, that is, we take the boys to the field and show them how to do the work. Most of the fellows have never done any farm work at all so we have some great times getting them to do things right. So many things which come natural to one born and raised on the farm, are not so easy for these fellows. All our spring plowing (80 acres) was done with city horses and by these men. Oftentimes where there is a job which only one or two can work at, a couple of fellows are sent alone to do it, there being practically no danger of their running off.

"There have been only four runaways since March 18, when we came up here with our first bunch of boys. In each case it has been a fellow who has been here less than ten days, and hence has not really become familiar with the place and its aims and ideals. The fellows work well. We have had no trouble in handling them. Of course we have to use quite different methods than we would with a hired man if they don't do exactly as we want them to, for we can't 'fire' them.

"The boys rise at 5:30, start work 7 o'clock, have noon hour from 11:30 till 1 P.M. and then work till 5:30. Bedtime is at 9 o'clock. All of us eat and sleep with the boys. A bunkhouse was built early in the spring to accommodate 50 fellows. We have been eating out of doors under some apple trees all summer.

"Fifty-five is the largest number we have had, but we did not reach this number till midsummer. After our first bunch of twelve, we have increased the number by bringing up bunches of eight or ten at once, and gradually working them in with the other fellows and into the spirit of the place. All are placed on their honor for there is nothing to prevent them from walking off the place. The idea of the Farms is to give the boys a chance to make a new start in life. The work, outdoor life and nearness to nature all helps to take the crime thoughts from the fellows. In short the whole idea of the place is to treat the men as human beings. And here is where this place differs from the New York City Reformatory from which they are taken and brought here. The prisoner in

Continued on Page 64.
Grooming with the KENT VACUUM GROOMER the Grand Champion Prize Winner Holstein Friesian Bull of the National Dairy Show, Chicago and Illinois State Fair, 1913, and New York State Fair, 1913-14.

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SHOULD be installed in every barn and stable for cleaning horses, cattle, etc. It removes the dandruff, dust, dirt, loose hair, lice, ticks, and knits which is not possible by any other method. Time, labor and much expense are saved. Improved conditions are gained. For further information, address

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Summer Schools at the New York State College of Agriculture.

(Continued from page 13.)

considerable discussion, also, of the courses of study. The addresses were given by members of the college staff.

The fourth session of the School for Leadership in Country Life was held June 23 to July 3, 1914. The sessions were held in the forestry building and the persons in attendance were housed in tents in the grove east of the main college buildings and adjacent to the forestry building. This arrangement was not only convenient, but it fostered social intercourse, which added greatly to the pleasure of those who were in attendance. As in the past, three years work in rural sociology, rural ethics, rural leadership, rural economics, rural health and recreation, the rural social survey, leadership for country girls, and extension work in agriculture, were offered. Sixty persons, representing the following occupations were in attendance: College teachers and extension workers, farm bureau managers, school principals and teachers, farmers, farmers' institute workers, country merchant, supervisor of girls' clubs, clergymen, Y. M. C. A. and Y. W. C. A. secretaries, officers of church organizations, writer, editors, housekeepers, and college students. These persons came from New York, New Jersey, Pennsylvania, Maryland, Massachusetts, Connecticut, Virginia, West Virginia, Indiana, Illinois, Michigan, North Carolina, Washington and South Africa. A most valuable feature of the school was an extensive and well selected exhibit of the work of rural organizations and institutions. It was the best exhibit of its kind that we have seen.

It is a satisfaction to all concerned that the facilities of the college are thus utilized continuously throughout the period when classrooms and laboratories are usually closed; and it is an equal satisfaction to have them used during the summer by persons who are unable by reason of other employment to enter the regular term courses.

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Notes on a Summer in Germany.
(Continued from page 28)
where he now is. Dr. Baur is one of the most eminent geneticists in Europe and in fact, the world. His case is typical of many such distinguished men who are now sacrificing their lives for their country. While a man is a man, whether learned or not, yet it is terrible to think of the great loss to science that this war causes. It is no less a loss to commerce, agriculture, and the like.

A friend of the writer had just been appointed to a position in the University of Missouri, but he must remain in Germany to become a soldier. After the mobilization had continued for a few days some of the trains resumed their schedules altho they ran very slowly. It would take six or eight hours to make an ordinary two hour run.

The war caused all Americans travelling in Europe at the time to hasten to the larger cities for protection and advice from the American Consuls and Ambassadors. Many of those in Germany tried to get to Berlin while others hastened to neutral countries such as Holland and Italy. There were probably eight to ten thousand Americans in Berlin. In a little over a week it was stated that something like six thousand passports were issued by the American Ambassador in Berlin. The crowd around the American Embassy seemed to increase daily until finally it became necessary to have a waiting line extending way into the street. Many were without funds, either as a result of not being able to cash letters of credit or because they were detained in Europe longer than they had planned. Thus many persons who are in the habit of taking only a comfortable surplus of funds were at this time in need of help. They were assisted by the American Embassy, the American Chamber of Commerce and the Berlin Chamber of Commerce.

The question on the lips of everyone was, "How are we going to get

(Continued on page 55)
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Conferences of High School Teachers
(Continued from page 35)

for the next conference was then appointed.

Only five of the schools which have this year been maintaining a vocational course failed to be represented. Men from other states and men who have taught in this state as well as men who are preparing to teach were present, making a total attendance of 51 teachers. The following is a list of the teachers who attended, together with the place where each is teaching.

Alden ............................................ W. E. Evans
Atlanta ........................................... Raymond Jeffers
Belleville ......................................... Claude Shill
Belleville ......................................... H. E. Greiner
Cherry Valley .................................... D. J. Flanagan
DeRuyter ......................................... E. T. Lewis
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Gowanda ........................................... W. C. Stokoe and L. P. Simons
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has greatly increased during the last few years owing to a firmer realization that the better the sanitary conditions, the easier it is to produce a higher quality product, and the easier it is to command the better market price.

By improved sanitary conditions the buttermakers of Iowa last year were able to receive 1½ cents per pound more on their yearly output of 100,000,000 pounds. Bigger dividends from better sanitation has been their actual experience.

The dependableness of Wyandotte Dairyman’s Cleaner and Cleanser to produce sanitary cleanliness, the uniformity of its cleaning ingredients, and its Harmlessness to milk quality have all become familiar to a large majority of those engaged in dairying. They realize that anything less than the Wyandotte Dairyman’s Cleaner and Cleanser purity and dependable quality is lessening their opportunity to earn bigger dividends from dairy sanitation.

Your dealer can supply you in sacks, or for kegs and barrels write your dairy supply house.


This Cleaner has been awarded the highest prize wherever exhibited.

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What your hens need right now is Dr. Hess Poultry Pan-a-ce-a. This splendid tonic is the result of my lifetime experience as a doctor of veterinary science, a doctor of medicine and a successful poultry raiser. It tones up the dormant egg organs, offsets the weakening effects of moulting, quickens quill shedding, makes for a new feather growth and makes hens lay.

Dr. Hess Poultry Pan-a-ce-a

Not a Stimulant, but a Tonic

Shortens Moulting Period—Makes Hens Lay

This is also a splendid tonic for fattening poultry for market. It helps the birds digest the maximum amount of their ration and convert it into flesh. It keeps poultry healthy and fit while cooped up. Besides, my Poultry Pan-a-ce-a is an excellent constitutional remedy for roup.

So sure am I that Dr. Hess Poultry Pan-a-ce-a will make your poultry healthy, make hens lay, help chicks grow and shorten the moulting period, that I have authorized my dealer in your town to supply you with enough for your flock and if it doesn't do as I claim, return the empty packages and get your money back.

My new Poultry Book tells all about Pan-a-ce-a. It's free.

Sold only by reputable dealers whom you know, never by peddlers.

Buy On My Money-Back Guarantee

1 lb. 25c; 5 lbs. 60c; 25-lb. bale $2.50. Except in Canada and the far West. Pan-a-ce-a costs only 1¢ per day for thirty fowl.

Dr. Hess

Stock Tonic

Taken off pasture, put on dry feed and closely confined, your stock are apt to get out of fix during winter. Some are liable to get constipation, dropsical swellings, stocky legs, but most common and dreaded of all diseases, especially among hogs, is worms—worms. Dr. Hess Stock Tonic will keep your stock toned up, enrich their blood, keep their bowels regular and rid them of worms. 25-lb. bale $1.60; 100-lb. sack $5.00. Smaller packages as low as 50c. Except in Canada, the far West and the South.

Dr. Hess

Instant Louse Killer

Kills lice on poultry and all farm stock. Dust the hens and chicks with it, sprinkle it on the roosts, in the cracks, or keep it in the dust bath, the hens will distribute it. Also destroys bugs on cucumber, squash and melon vines, cabbage worms, etc., slugs on rose bushes, etc. Comes in handy sifting-top cans, 1 lb. 25c; 5 lbs. 60c. Except in Canada and the far West. I guarantee it.

DR. HESS & CLARK,
Ashland, Ohio.
Notes on a Summer in Germany.
(Continued from page 50.)

out of Germany to America?" Of course, the big German steamers had stopped running and no guarantee was given that the English boats would run, so many went to Holland to take the boats of the Holland-American Line. We were advised to get to Holland if possible. The Embassy arranged with the German government to run a special train for Americans from Berlin to Rotterdam. A large number took the first train out and many were able to arrange passage and come home. The next week it seemed more hopeless and the American Ambassador arranged with the Holland-American Line to sell 125 steerage tickets. First these were given to women and children and young women travelling alone. Preference was given to American born citizens. Another special train was run to Rotterdam and about 450 Americans came on it. We took this train. It took about 32 hours to make this 8 hour journey. It was made without incident and we were very comfortable. Since we were all Americans bound for home we knew we were all friends and thus enjoyed ourselves very much.

When we arrived in Rotterdam many were able to obtain good accommodations on the Steamer Ryndam. We were among the fortunate. Many of those who had obtained the steerage tickets were able to change them for first and second class accommodations. This was done after sailing however and a great many came across as steerage passengers. The boat company and first and second class passengers had no objection to the steerage passengers using the entire boat. Altho the boat was crowded and the food was not as good as the Holland-American Line is noted for, we were going home to our United States and so we were happy.

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Changes on Quadrangle and All the Campus. The Schoellkopf Memorial Building is practically finished, altho it will not be used by the teams this Fall. Forms are going up rapidly for the Stadium seats and the concrete curbing around the quarter-mile track is finished. The work of filling in the track with cinders to a depth of eighteen inches is progressing.

The new Animal Husbandry Building is completed and has been accepted by the State architect. The department has moved to its new quarters. During the winter the building will be heated by a set of portable boilers, since connections can not be made with the rest of the Agricultural heating pipes.

The Stock Judging Pavilion is completed and ready for acceptance.

Work on the Agronomy building has progressed. All the outside painting and plastering is finished.

The big organ in Bailey Hall has not as yet been accepted, altho the construction is finished. Work of laying the linoleum on the floors has been going on since the close of the Summer School.

Among the most important repairs done by the University is the relining of the large University reservoir. While work was going on the University was supplied from city mains.

The bids for the new Armory and Drill Hall which is to be built on the site of the Fuertes Observatory, were received at the Treasurer's office on September 28.

In order to promote Findlay interest in Land Drainage Prize among the students of the College of Agriculture, two prizes, of twenty-five and ten dollars respectively, are offered by Mr. James A. D. S. Findlay, of Salisbury Mills, New York, for the best discussions of some phase of drainage improvement.

This competition has been established by Mr. Findlay as a result of his observation of the great needs for and benefits to be derived from better land drainage in New York State.

The discussions shall be in essay form, of not less than one thousand or more than three thousand words in length, typewritten on 8 by 10½ paper. The papers entered will be presented at an evening session during Farmers' Week in 1915, and may be either read or delivered from memory. Seventy-five percent will be allowed for subject matter and twenty-five percent on presentation.

Any regular, special, short-course or graduate student in the College of Agriculture is eligible to enter this competition.

Duplicate copies of papers should be submitted to Professor E. O. Fippin, of the College of Agriculture, Ithaca, N. Y., on or before January 10, 1915.

The papers will be judged by a committee of three persons.

For further information, see any of the following persons: Dr. H. O. Buckman, Professor B. B. Robb, Professor E. O. Fippin.

(Continued on page 58)
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Dr. Iy. H. Bailey is at present traveling with his wife and daughter, Miss Ethel, thru New Zealand to study agricultural and governmental conditions there. He has gone, so "Science" informs us, as the guest of the New Zealand government to attend the Australasian meeting of the British Association for the Advancement of Science.

An honor was bestowed on one of the college staff and upon the Department of Home Economics by the election of Professor Martha Van Rensselaer to the presidency of the American Association of Home Economics at their annual meeting recently held in Cleveland, Ohio.

The annual New York State Fair was held in Syracuse August 31 to September 5, inclusive. Nearly all of one wing of the State Institutions Building was occupied by the exhibits of the State College of Agriculture. Sixteen departments of the college were represented in this building, while the Plant Pathology, Entomology, and Vegetable Gardening Departments staged their exhibits in the Fruit and Vegetable Buildings. A new arrangement of the booths met with general approval, as it allowed visitors to enter the booths and get on more intimate terms with the exhibits and the instructors in charge. Six of the booths were arranged along the walls, with the rest in two groups of five each in the center of the building.

The exhibits illustrated graphically by means of charts, specimens, and other material the results of experiments conducted at the college. Some of the principles taught in Animal and Poultry Husbandry, General Agriculture and Home Economics were also demonstrated. It is estimated that between 85,000 and 110,000 persons visited the College Exhibits.

Geologic History and Origin of Soils

(Continued from page 20)

given rise to extensive areas of muck land.

In conclusion it must be emphasized that within the limits of these pages it has been possible only to indicate the most general features in the origin and history of the state's soils. It would be necessary to consider many individual areas in detail to make the story complete. Perhaps what has been set down will serve as a clue to its fuller investigation, and also to make more intelligible some of the phenomena described in later articles of this series. If so, though fragmentary and imperfect, this account will serve its main purpose.
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The Soils of New York State
(Continued from page 25)

Dekalb. This is the only residual soil in the state and comes from the same rock as the Volusia series. The area having been unglaciated, retains its original mantle altered to some extent by glacial wash. It is a very poor soil, light in color, poorly drained and low in humus. It is hilly and considerably eroded. It needs lime and is one of the poorest soils in the state.

Norfolk. Here is the marine soil already spoken of. It is of a light gray to brown color. The humus content is low and lime may often be used to advantage. The drainage is fair. Its topography is level and the elevation low. Sandy loams and sands predominate. It is one of the important trucking soils of the State, not only because of its texture but because of its market facilities.

It is then seen that the underlying geology plays a great part in the fertility of New York soils and that the outcropping of the limestone is an essential factor. With the points already presented in mind a detailed description of any section of the State should not only be clear but be filled with particular significance. It is not a difficult matter to see the origin of the soils in any particular region of the State or to understand the reason for their response or non-response to agricultural operations.

Accounting as a Factor in Home Economics
(Continued from page 33)

The value of an account rests upon the ease with which the following information can be gained from it—totals of receipts, expenditures, debts contracted and the relative expenditures for necessary living expenses and items which may, to a greater or lesser extent, be considered luxuries. In a college account these subdivisions naturally suggest board, lodging, fees, dues, book, clothing, laundry, and miscellaneous items, classified to suit the individual. A more simple form showing cash receipts and expenditures only, gives merely a record of totals, the valuable and interesting information obtained by the subdivision mentioned above being acquired only by the expenditure of much additional time. The usual result is that either no comparison is made, or only that of totals for succeeding years.

In the same way household accounts may be kept without the necessity of many books and a complicated system. The comprehensive division given by Mrs. Ellen H. Richards, namely—shelter, food, clothing, and the higher life,—may well be used. Further subdivisions of these headings will depend upon circumstances in the household, and the wish of the individual. A consideration of these accounts involves, in addition to the record itself, such questions as (1) the budget, or the apportionment of the probable income; (2) conveniences for ordering; (3) payments by check; (4) filing of receipts for reference; and (5) the inventory of furniture and furnishings.

The apportionment of the income at the beginning of each year is rendered comparatively simple by reference to the accounts of previous years. Whether the income is large or small, a wise division is important. Statistics have been compiled by many writers, showing the average annual expenditure of families of various nations and of different social conditions. Ellen H. Richards in "The Cost of Shelter" makes the following suggestion as to the subdivision of an annual income of $2,000,—$500 for reserve; $300 each for rent, food, and operating expenses; and $200 each for clothing, travel, and miscellaneous expenses.

The purchase of supplies is an important item about which much has been written. Some simple device to ensure renewal of stock, as, for instance, a memorandum pad kept in the kitchen, saves the housekeeper much time and patience.

(Continued on page 62)
New York State College of Agriculture at Cornell University

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No Stock Except SWINE Sold at Private Sale

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Breeding Stock: A good supply of Single Comb White Leghorn breeders is available and poultrymen should let us know their needs. A few good breeders of the following varieties may also be furnished: Barred, White and Buff Plymouth Rocks, Rhode Island Reds, Mottled Anconas, Pekin, Rouen and Indian Runner Ducks and Toulouse Geese.

Four Good Records by S. C. White Leghorns

<table>
<thead>
<tr>
<th>Poultry</th>
<th>Eggs laid 1st year</th>
<th>Eggs laid 2nd year</th>
<th>Eggs laid 3rd year</th>
<th>Total Eggs laid 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lady Cornell</td>
<td>237</td>
<td>190</td>
<td>194</td>
<td>621</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>190</td>
<td>196</td>
<td>631</td>
</tr>
<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
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<td>592</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>190</td>
<td>220</td>
<td>652</td>
</tr>
</tbody>
</table>

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The preserving in an orderly fashion of receipted bills is also important. A simple indexed letter file serves this purpose well. Such receipts may not only settle disputed payments, but save the entry in the accounts of much detail.

The inventory is of greatest importance as a factor in determining insurance, but it is also a convenience as a record of supplies on hand, and aids materially in the renewal of such stock as linen.

With a knowledge of this type of account and its underlying principles, a student of institutional management is on more or less familiar ground in considering the greater detail of the subjects she studies in preparation for the keeping of records necessary for a public institution, or for some enterprise of her own.

* * * *

†Professor Haskins' book, from which has been taken much of the historical aspect of accounts for this paper, deals, in considerable detail, with the method of keeping household records. Published by Harper and Brothers, New York and London, 1903.


Last Summer's Experiences in Germany (Continued from page 31)

harvest, in two days entirely changed over, to the military service of the country, and the harvest entrusted to the hands of the women and children.

While the train service was entirely taken over by the government and the public was advised that traveling would not be permitted, we still made a number of trips with no great inconvenience. We were constantly being stopped by the military authorities and asked to show our passports and upon two occasions were surrounded by soldiers and arrested for being English. However, we were always taken, sooner or later, to some officer who would satisfy himself that we were Americans and after that there would be no difficulty until we had moved to another place. In going from place to place it was necessary to at once register with the police or military authorities. The people were very much excited and it was not wise to do anything that would arouse suspicion. I was very anxious to take pictures, but one did not dare to even show a kodak. We even found the pinning on of a small American flag would arouse suspicion, as someone would surely think that you were an Englishman trying to pass off as an American. However, in the large cities, where they are accustomed to tourists, one was quite safe, as the authorities were able to recognize tourists, but in a small town, where they were not accustomed to tourists, the people were quite suspicious and it was not safe for people who could not speak the German language. Traveling by train was very uncertain. At any time a train might be crowded with soldiers and a compartment intended for six people would be filled with perhaps twenty, with all kinds of baggage besides. The trains also ran very slow. Our trip from Hanover to the Holland border, which ordinarily takes three hours in times of peace, took eighteen hours, and then it was necessary to change trains six times. As most people were obliged to leave their trunks, generally every man, woman and child was carrying all the baggage they could manage. We did not have any particular difficulty in getting over the German border but most people breathed a sigh of relief when it had been passed. We also were greatly interested in finding out what had been going on in the world since the (Continued on page 64)
We are specialists in

**Color Plate Engraving**

and **Color Printing**

If you want to increase the selling power for your next catalogue, if you want to make your advertising as effective as possible, you should look into the question of using color reproductions. Our success lies, not alone in the making of proper plates but in printing them as they should be. Our product is used by companies of international reputation. We shall be pleased to submit estimates or samples of work.

611-18 Central Building
Rochester N.Y.
Last Summer's Experiences in Germany

(Continued from page 62)

war had started, as practically no outside news had come into Germany and no news reached the public except such as the government was willing to allow. This news, in general was badly construed and quite often entirely false. We, of course, also found considerable false news outside of Germany, which seems to be one of the things accepted as a necessity of war.

There is no use in speculating as to what effect the war will have on agriculture in Germany, but the country could easily lose a half or two-thirds of its agricultural laborers and take their places by the use of improved machinery without any great handicap. It is safe to say they use three or four times as much man labor on the same land in Germany as we use in America.

Former Student Notes

(Continued from page 46)

the City Reformatory as in most all prisons is made worse rather than better. If our prisoners could all have a helping hand, many of them would make useful and law abiding citizens in contrast to the prison made criminals who are only let go to return again. The motto of the New Hampton Farms is, 'As a man thinketh in his heart so is he.'

"There are 600 acres in this Farm of which 125 acres are muck, 50 of them being tillable. The land is in a somewhat run down condition.

"The Farm is situated on the State Road from New York to Middletown and Port Jervis and is 60 miles from New York, four from Middletown. It borders the banks of the Walkill River. Most of the tillable part of the farm is perfectly level. The principal crops raised this year are 20 acres potatoes, 20 acres corn, 18 acres oats, 20 acres truck, consisting of onions, table beets, turnips, carrots, cabbage, and about five acres of miscellaneous crops.

"Next year there will be at least two hundred fellows up here and probably by the following year all of the Hart's Island (New York City Reformatory) consisting of about five hundred will be up here. An appropriation for buildings amounting to $396,000 has been made for this place. This year the Farm has been run on an appropriation of $10,000, which includes the cost of building the bunk-house, equipping the farm, paying the salaries, and the like. The horses and considerable other equipment have come from other City Departments.

Quite a number of the fellows have taken jobs on farms after their time was up. Several who went back to the city are anxious to get out in the country again. Some of them, I think, really want to stay in the country because they like it, others only because they know it is free from temptation and most of all keeps them from getting in with their old companions.

"All in all I like my position even though it is a rather peculiar one in many ways and ties one down. There is the satisfaction of helping others and most of us are happiest when we are helping others.

"Wishing the COUNTRYMAN the best of success this coming year, I am, Sincerely yours,

J. Lossing Buck."

'14, B.S.—Eloise Dresser is teaching Home Economics in the Cleveland public schools.

'14, B.S.—Mary Doty is managing the Y. W. C. A. cafeteria in Fort Wayne, Indiana. Miss Doty also had charge of the purchasing of the equipment of the building.

'14, B.S.—Jeanette Evans had charge of the Home Economics work at Camp Chedwel, Chautauqua Lake, during the summer and will teach at the Greigsville high school this year.

'14, B.S.—Agnes Keane is head of the Domestic Art and Sewing department of the High School of Ogden, Utah.

(Continued on page 66)
Reserved for the CROSS DOORHANGER CO.
Fultonville, N. Y.

We Do Your Mending Free

Forest City Laundry
E. M. MERRILL
BAGS FREE
209 North Aurora St.

COLLEGE GIRLS will find a Wide Variety of
DRY GOODS at the TODD COMPANY
120 EAST STATE STREET

Former Students!
Keep in touch with the College. Write and
let us know what you are doing—your
friends want to hear about you.
One Dollar will send the Countryman to you for a year.

Get Help from Pump Experts
Finding out before you buy will save you
money and trouble after you buy a pump or
water system.
Our Consultation Department is helping
hundreds of farmers daily to choose the right
pump for the right need. There are over 300
types. One is best for your purpose. Find
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man who knows all about pumps and their
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Outsell all others. Goulds pumps are made
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by return mail.

The Goulds Manufacturing Co.
19 W. Falls St. Seneca Falls, N. Y.
Largest Manufacturers of Pumps
for Every Service.

In writing to advertisers please mention The Cornell Countryman
Former Student Notes
(Continued from page 64)

'14, B.S.—Katherine H. Mills, formerly Home Economics Editor of the COUNTRYMAN, is with the Erie County Farm Bureau. She is the first woman to be connected with farm bureau work in this state and it is very probable that the movement will be continued in the future. At present she is holding three day extension schools and organizing Home Makers' clubs in the county.

'14, B.S.—Claribel Nye is state agent under the Federal government over the canning clubs. This work is in connection with the Bureau of Plant Industry of the United States Department of Agriculture.

'14, B.S.—J. J. Swift, former Business Manager of the COUNTRYMAN, is operating in partnership with his father a 75 acre fruit farm near Middleport, N. Y. The principal kinds of fruit grown are apples, peaches and cherries. Mr. Swift believes the most logical and useful life for the graduate of an agricultural institution is to be a good farmer and an earnest worker for the welfare of his own community.

'14, B.S.—Edna Alderman is in charge of the Domestic Science department of the East Bank High School, West Virginia, and has superintended the purchase of the school equipment for that department.

'14, B.S.—Fannie D. Boone is teaching Home Economics at Erie, Pa. The department there is a new one and Miss Boone, also, superintended the purchase of the domestic science equipment.

Business Men Can Make Money with an Orchard

Business and professional men make successful fruit growers. They select a good location, prepare the soil properly, then they

Plant Fraser's Fruit Trees

Fraser's trees are clean, strong, healthy, scientifically grown. Get ready now for fall planting. Send for Fraser's Tree Book, which describes the right trees for a profitable orchard.

Samuel Fraser, Nurseryman
94 Main St. GENESEO, N. Y.

Cafeteria
HOME ECONOMICS BUILDING
THREE MEALS DAILY

THE SHOP OF SHOPS

Come right in to headquarters where you can find everything for man's wear at lowest prices. Leave your measure for One Half Dozen Shirts for One Dozen Dollars. We have a whale of stock of Furnishing Goods, Hats and Caps.

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The Toggery Shops

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to save 17½ cents on every bag
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Twenty-eight average customers
did this during the year 1913-14. Investigate our Special
Rates on soft wash.

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STUDENT LAUNDRY AGENCY
Next to the White Gateway
M. L. CAREY, '15   H. O. BONNAR, '16

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Bring that old fountain pen in to us and get one of
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Come in and look over our stock of Lamps for electricity, gas and oil, also other room fixings.

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of our old reliable standard
Ithaca Phone—510

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OUR $1.00 FOUNTAIN PENS
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We also carry in stock a very large assortment of
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Wise THE—
PRINTER
is at your service for
all classes of
Fine Printing, Engraving, Etc.
Buffalo St.—Next to Post Office
ITHACA, N. Y.

Carr & Stoddard
High Class TAILORS
Note—If you desire a medium price suit anywhere from $20 to $30, we ask you to
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Corner Seneca and Aurora Sts.

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Laundry
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ARE NOT SHORT-LIVED
In 1313 eighteen Jersey cows were officially
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If you desire for your suit a good CLEANING AND PRESSING, also SUITS MADE TO ORDER at a reasonable price, or drill suits come to

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D. S. O'BRIEN

222 N. Aurora St. MARKETS 430 N. Cayuga St.

Dealer in Fresh, Salt and Smoked Meats
Poultry and Game in Season

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European Plan

Ithaca's Modern and Up-to-Date Hotel

A La Carte Service at all hours in the Famous Dutch Kitchen or beautiful Dining Room :: :: ::

Large and Small Banquet and Dining Rooms will be reserved for private parties. :: :: ::;

Many new rooms with tiled private bath single or en suite.

Musical program will be rendered by the Hotel Orchestra every noon and evening.


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A La Carte Service
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After Theater Suppers a specialty

Music Every Evening

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Established 1836
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Tioga Street, cor. Seneca
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I'll Show You How

To make them grow faster—thrive better—look better—
Put on flesh on no more feed—stop losses from worms—

I have done it for thousands of farmers and stockmen—I'll do it for you. All I ask is the privilege of sending you enough Sal-Vet to last your stock 60 days. I simply want to show you what a remarkable change Sal-Vet will work on your sheep, your hogs, your horses and cattle. I want to show you how it will improve their condition—rid them of all stomach and free intestinal worms which are the biggest drain on your stock profits.

I don't ask a penny of pay in advance. I prove all my claims first—and if you are not satisfied at the end of 60 days, you do not pay me a cent.

The Great Worm Destroyer

Sal-Vet is first a worm destroyer; second, a conditioner; a medicated salt. It contains several medicinal elements which promptly kill and expel stomach and free intestinal worms and in the meantime puts the digestive organs in a healthy, vigorous condition. It sharpens the appetite—tones the blood—puts life and vitality into the whole system. It aids digestion—helps the animal to derive more good from its feed.

No Drenching—No Handling—They Doctor Themselves

It is easy to feed Sal-Vet—you feed it just as you do salt. Put it where all your stock—sheep, lambs, hogs, horses and cattle, can get at it daily and they will doctor themselves. It will keep your hogs, sheep and lambs from dying—make your horses and cattle look better, thrive better—save you money in saving feed—make you more profit by making your stock more valuable.

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"I write to say that I have been a free user of Sal-Vet ever since its introduction and find that it is a perfect worm exterminator. I feed Sal-Vet as I would salt and it positively does all that you claim for it. There is nothing within my knowledge as good and reliable as Sal-Vet. It expels worms and puts stock in fine condition."

SIDNEY R. FEIL, President

THE S. R. FEIL CO., Dept. CC, Cleveland, O.

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Do you still sing them?

The Agricultural Association has just published a new book of
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The Manufacture and sale of this brand
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Below is shown a fac-simile of the Red Tag
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Address all communications to

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ADVERTISERS just a word about

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Over Six Thousand Farmers have attended the N. Y. State College of Agriculture at Cornell University and they still keep in touch with their Alma Mater through the monthly magazine, The Cornell Countryman.

They are the progressive, prosperous, scientific farmers who demand the best commodities

Let us help you to reach this select class and increase your sales

Write for advertising rates and further information

The Cornell Countryman, Inc.

ITHACA, N. Y.
Your appreciation has been our success

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DID IT BECAUSE IT CLEANS CLEAN.

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Weatherproof Decayproof Fire-resistant

It will last a lifetime and the first cost is practically the last cost. It can be erected by any mason as easily as a carpenter builds the old type of silo. When completed you have a very attractive as well as an efficient and durable silo added to your permanent farm building assets.

WRITE FOR FREE SILO BOOK We have an attractively illustrated book which we will be glad to send free to Cornell men or to any farmer interested in keeping ensilage fresh, sweet and succulent. Write for a copy now and names of owners of Natco Imperishable Silo in your locality

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Brand New Apartment Store

A magnificent new four story building now being fitted with an up-to-date equipment.

Fully stocked with an attractive assortment of new and moderately priced stock of merchandise in every Department.

A full line of Student Room Furnishings in our new spacious basement sales room and a very attractive assortment of Men's Furnishings at the prices you can afford to pay.

ROTHSCHILD BROS.
Cor. State and Tioga Sts. Ithaca, N. Y.

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LOOK AHEAD!
DON'T TRY TO SAVE $10.00 TODAY if it means a loss of 25 cents a day for all the years a cream separator may last you.

THAT'S JUST WHAT YOU WILL do if you buy a cheap or inferior cream separator simply because its first price is a little less than that of the DeLaval.

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WHAT HE WANTS IS A MACHINE to perform a certain service, and he must be sure of the machine doing the work for which it was intended as thoroughly and with as little effort as possible on his part.

THOUSANDS OF BABCOCK AND other tests have proved that the DeLaval skims closer than any other cream separator under any conditions, and particularly under the harder conditions always experienced at times.

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CREAMERYMEN, WHO ARE DEPENDENT on their separators for business success, have long since found out the difference between DeLaval and other separators, with the result that DeLaval factory separators are almost universally used the world over today.

DE LAVAL SEPARATORS ARE identical in all sizes, for one cow or a thousand, and the differences between separators are just the same with the smallest machine and the largest. They mean as much relatively to the little as the big user.

THEN THERE IS THE SAVING IN labor because of the easier running and greater capacity of the DeLaval over other machines and the less care required in cleaning and adjustment, worth at least 10 cents a day.

AND THERE IS THE INDISPUTABLE fact that a DeLaval machine lasts from ten to twenty years as against an average of from two to five years in the case of other separators, or five times the average life of competitive machines.

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IT SHOULD BE REMEMBERED moreover, that if first cost is a serious consideration a DeLaval Separator may be bought on such liberal terms that it will actually save and pay for itself, as many thousands of them have done.

These are all facts every DeLaval local agent is glad of the opportunity to prove to any prospective buyer. If you don't know the nearest DeLaval agency simply write the nearest main office, as below.

The DeLaval Separator Co., 165 Broadway. - NEW YORK 29 E. Madison St. - CHICAGO

50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER

ANDRUS & CHURCH. Printers, Ithaca, N. Y.
"BUT THE AIR'S SO APPETIZIN'; AND THE LANDSCAPE THROUGH THE HAZE OF A CRISP AND SUNNY MORNING OF THE AIRLY AUTUMN DAYS IS A PICTUR' THAT NO PAINTER HAS THE COLORIN' TO MOCK WHEN THE FROST IS ON THE PUNKIN AND THE FODDER'S IN THE SHOCK."
WE had thought about offering a cash prize of $736.33 for the correct pronunciation of this word, making the offer to persons who are at present alive in any portion of the world, but after another think we thought it wholly unfair, as there would be many people needing the money who would be slaughtered before word could reach them, and so many already dead that it might appear as if we were discriminating. So we thought again that in lieu of cash, we would offer some good advice that we know to be absolutely harmless, in fact, if one should swallow all of it, recovery would be possible.

The advice was fathered by a thoughtful think in the minds of many Fruit Growers who have fruit tree troubles to contend with. Many of them, by careful investigation and experimental work, have found Fall Spraying very profitable and are already preparing to do more of it this season. The thinking period has about closed and the acting is at hand. Ask your neighbor who has tried it, or ask someone in connection with the state work, if it is advisable. If convinced it is worth a trial write at once to P. O. Box 712, Rochester, N. Y., for price on Lime and Sulphur to do the work. Your letter will be delivered to The Rex Company.

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111 North Aurora Street
Next to Alhambra

Suits, Overcoats, Balmacaans

Pheonix Silk Hose Guaranteed

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

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

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

General Circular of Information for Prospective Students,
Announcement of the College of Arts and Sciences,
Courses of Instruction in the College of Arts and Sciences,
Announcement of the Sibley College of Mechanical Engineering and Mechanic Arts,
Announcement of the College of Civil Engineering,
Announcement of the College of Law,
Announcement of the College of Architecture,
Announcement of the Medical College,
Announcement of the New York State College of Agriculture,
Announcement of the Winter Courses in the College of Agriculture,
Announcement of the New York State Veterinary College,
Announcement of the Graduate School,
Announcement of the Summer Session,
The Annual Reports of the President and the Treasurer,
Pamphlet on Prizes, samples of entrance and scholarship examination papers, special
departmental announcements, etc.

Correspondence concerning the publications of the University should be addressed to

The Registrar of Cornell University

ITHACA, N. Y.

New York State College of Agriculture at Cornell University

B. T. GALLOWAY, Director

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

1. Four-year course, leading to the degree of Bachelor of Science in (B.S.). When
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ture and out-door art or to home economics. In the Graduate School of the Univer-
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2. Special work, comprising one or two years: (a) Agriculture special; (b) Nature
study special or normal course,

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

The instruction is divided among twenty-two departments as follows:

- Farm Practice and Farm Crops
- Agricultural Chemistry
- Plant Physiology
- Plant Pathology
- Soil Technology
- Plant Breeding
- Entomology, Biology and Nature-study
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- Pomology
- Animal Husbandry
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- Extension Teaching

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Write for Catalogue and Prices

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Table of Contents.

NOVEMBER, 1914

Cover.  Photo by Verne Morton

Frontispiece - - - - 90

The New Apple Law.
    Halsey B. Knapp 91

    H. E. Ross 94

The Lever Extension Act.
    Dr. B. T. Galloway 98

An Agricultural Survey of New York State.
    Article No. 3.—The Climate of New York in Relation to Agriculture.  W. M. Wilson 100

Agricultural Competitions for Boys and Girls in New York State.
    Edward M. Tuttle 109

The Pilgrim Thanksgiving Dinners of 1621.  Blanche E. Hazard  -  - 116

Editorials - - - - - - - - - - - - 120

Campus Notes - - - - - - - - - - - - 123

Former Students Notes - - - - - - - - - - - 128

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THE NEW APPLE LAW
Why It Was Needed and What It Hopes to Accomplish

By Halsey B. Knapp
Assistant Professor of Pomology, New York State College of Agriculture

The New York Apple Grading and Branding Law which went into effect July 1, 1914, is distinctly a fruit-growers' measure. It was formulated by a committee selected by fruit-growers' organizations and was enacted through pressure brought to bear by the same associations. A knowledge of the origin of the measure furnishes the only endorsement that it needs.

Back of the whole movement lies the recognition of the sound business principle that any permanent trade must be based on reliability, that the keynote of all business and commerce must be confidence, that trade and commerce not so based can flourish only so long as the article in question can be obtained in sufficient quantity from no other source.

Sentiment among New York State fruit-growers has been crystallizing for many years into the belief that a law was necessary that would standardize a barrel of apples and that would guarantee to the purchaser an article worth the money. Evidence of the need for such a measure in this state is not lacking. One does not have to consult the files of trade journals many years back to find that there was a time when the Virginia York Imperial brought fifty cents a barrel less on the New York market than did New York Baldwins, supposedly of the same grade. Today on the same market the York Imperial brings fifty cents to a dollar more per barrel than do our Baldwins. The York Imperial has not improved in quality and the Baldwin has not deteriorated in quality during these years, but the average barrel of Virginia York Imperial is much better packed to-day, while our Baldwins are as unreliable as ever. Virginia has a grading and branding law.

Western fruit-growers have shipped their fruit from one coast to the other and have taken the better class of trade in every one of our large cities. It is impossible to purchase New York apples on fruit stands or from high class grocers in New York, Poughkeepsie, Troy, Albany, Schenectady, Syracuse, Buffalo and even Rochester in the heart of the world's greatest apple belt. You ask for an apple and you get a western apple. If we except the apples grown at Bailiwick how many have been able to secure New York apples worthy of the name at any store in Ithaca? Western apples are packed under rigid supervision and subject to inspection by the association through which they are sold. The western grower is no more honest than the eastern grower, but he has been saved from self destruction by force of
circumstances. Transportation charges are too high for him to ship any but the best fruit east, every apple must be worthy a place in the package. It would be better in some ways if markets were not so accessible to New York fruit-growers.

In the markets of the world the story is the same. Canadian apples sell at a premium of at least fifty cents a barrel over the same varieties grown on this side of the St. Lawrence. In fact the excellence of the pack has at times appeared to be in inverse ratio to the number of x's on the head of the barrel. A single barrel dishonestly packed injures not only the reputation of the man who packed it, if his identity is ever known, but it injures the reputation of New York grown fruit. Therein lies the problem which the law is designed to meet. The honest packer is entitled to protection and it is intended that

Canada has a grading and branding law. Our consuls have repeatedly stated without qualification that New York fruit-growers can not hope to increase foreign demand so long as the pack is unchanged.

The only way to better conditions is first to face them as they exist. New York apples have always been rated high in quality. Their present low rating can not be attributed to deficiency in this respect. Enough New York apples have been packed and are packed dishonestly to seriously damage the reputation of our fruit.

In fact the time is ripe for such a measure. If we sell our apples in the future we will sell them on their merit. Apples are too plentiful, and they may be obtained too easily from other sections to make it a matter of compulsion for consumers to buy of us. This will be increasingly true from year to year as the new plantings approach the period of full bearing.

The law demands no more of apple growers and dealers than the public
has demanded of fertilizer and feed manufacturers, makers of patent medicines and many others, namely that the label shall state the character and quality of goods in the package. The law establishes four different grades or classes of apples, but it imposes no restrictions concerning the kind of fruit that shall be packed, so long as the barrel is marked in accordance with what it is. To that no honest man may object. Every barrel or box must be labeled with the true name of the variety, the grade or class of apples contained in the package, the name and address of the packer or the person by whose authority the fruit is packed and the minimum size of the fruit in the package. Further than this if the fruit falls below the percentage of tolerance provided for the different grades it must be stated in just what respect the fruit is deficient, whether scabby, wormy, not hand picked, etc. This requirement holds for every grade. More valuable than any specification of grade is the requirement that the man’s name and address shall appear on the barrel. This has proved the most valuable feature of similar laws in other states and in Canada. Copies of the measure may be obtained from the Department of Agriculture, at Albany, or from the College of Agriculture.

It is hoped that by means of this law a barrel of New York apples may come to possess a permanent and uniform rating in the apple world, that it shall become as reliable as a pair of Douglas shoes, a can of Royal Baking Powder, a Gillette safety razor or a McCormick grain binder. Immediate results should not be looked for. It has taken some time for the public to lose confidence in our fruit, it will require some time to regain it. There is no time like the present for the working out of such a law. Apples are cheap due to an unusual combination of circumstances and will be sent to markets in which they ordinarily are not known. Let them carry with them the assurance that New York grown fruit is sold on merit, that it is fruit of quality backed by an honest pack. Many men have come to see that the year 1896 was one of the best that fruit-growers have known; it may be that 1914 will be productive of equal good.

It speaks well for the fruit-growers of New York State that they have voluntarily expressed a willingness to “let the label tell” on a barrel of apples. Fruit-growers and fruit-growing in this state have come to a parting of the ways. A step in advance has been taken, a forerunner we hope, of better things.
BUSINESS METHODS IN DAIRY INDUSTRY

H. E. Ross
Professor of Dairy Industry, Cornell University

The business of dairying naturally divides itself into two divisions, first, the production and sale of milk, and second, the manufacture of the various kinds of dairy products. In New York State, dairy industry ranks as one of the important branches of Agriculture, as is shown by the following table taken from the last census report.

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cows in New York State</td>
<td>1,509,594</td>
</tr>
<tr>
<td>Number of pounds of milk produced</td>
<td>6,546,074,427</td>
</tr>
<tr>
<td>in 1909 in New York State</td>
<td></td>
</tr>
<tr>
<td>Number of pounds of butter produced</td>
<td>69,358,918</td>
</tr>
<tr>
<td>in 1909 in New York State</td>
<td></td>
</tr>
<tr>
<td>Number of pounds of cheese produced</td>
<td>115,408,222</td>
</tr>
<tr>
<td>in 1909 in New York State</td>
<td></td>
</tr>
</tbody>
</table>

The total value of dairy products in New York State for the year 1909 was over $77,800,000 as compared with over $55,000,000, as shown by the census report of 1900. It would seem from these figures that the business of dairying in New York State was rapidly increasing, but it must be confessed that the great increase in the value of dairy products during the past decade is due to an increase in price rather than an increase in the volume of production. There has been only a comparatively slight increase in the number of dairy cows in New York State, and the increase in milk production per cow per year is only about 37 pounds. These figures should have a great deal of significance when compared with the increase in the cost of production and manufacture of dairy products, which has been far in advance of the increase in price received for dairy products.

Investigation has shown that many producers of milk and manufacturers of dairy products are either doing business at a loss or else on so small a margin of profit that the owner does not receive a decent wage for his work.

There are several reasons for the small margin of profit received by many dairymen and probably the chief one is the lack of application of business methods. The milk producer has in many cases kept cows in his herd which did little more than pay for the food they ate, and in many instances, they did not do that, but were being kept at an actual loss. During the past few years, Cow Testing Associations have been formed among milk producers, which have for their object the weeding out of unprofitable cows from the herd. The method followed in these Associations is to weigh the milk and test it for butter fat, morning and night, from each member of the herd, once per month, during the entire lactation period. This will give a good estimate of the profitableness or unprofitableness of each animal. In almost every herd where no previous record had been kept, unprofitable cows have been found. A good example of the lack of application of business methods to milk production was shown in the case of one man who was very reluctant about placing a certain cow in his herd in the Testing Association. His reluctance was due to the fact that the owner thought the cow was too poor a producer to pay for the expense and trouble of having her tested. He finally consented to place her in the Association and she proved to be the most profitable animal in his herd. This dairyman was doubly blamable. The cow mentioned was eight years old and she had been kept those eight years with the owner not only in ignorance of her value, but in the belief that she was an inferior animal.

Many manufacturers of dairy products are slow to apply business methods to their business. One common source of loss is the failure to remove all the fat possible from the milk during the process of separation. The
losses sustained can be illustrated by a concrete example. A factory separator should skim as close as .05%. If through carelessness and inattention, the separator is allowed to get in such condition that it skims to only .1%, there is a loss of .05% of fat more than would normally be expected. This may seem like a small percentage, but in 5,000 pounds of skimmed milk there would be a loss of 2.5 pounds of fat which at 30c per pound would have a value of 75c. In one year this loss would amount to $273.75. Think of (or better still compute) the enormous loss that there would be in 50,000 pounds of skimmed milk in one year. Many operators of farm separators claim that they do not care if the skimmed milk contains more than the normal percentage of fat, since the skimmed milk is fed to pigs and calves. While it is true that the butter fat is a good food, it is in most cases an exceedingly expensive one. If the fat were removed and sold in the form of butter, it would purchase enough feed to far exceed from an economic standpoint, its value as a food for animals.

Butter consists largely of fat plus some water, salt and casein. The difference between the amount of fat in a given amount of cream, and the amount of butter obtained from that cream, is called overrun or churn yield, and within certain limits it is desirable to get a large churn yield. Many creamerymen pay little attention to checking their losses from this source. A concrete problem will illustrate its importance. If a creameryman received 500 pounds of butter fat per day and did not obtain within 2% of the overrun which should be obtained, the loss would be 10 pounds. At 30c per pound this would mean a loss of $3.00 per day, and a loss of $1,095 in a year. The larger the amount of product handled, the greater would be the amount lost.

Other losses in dairy industry frequently result from keen competition. When milk is scarce, buyers will often offer in advance, prices which later developments will not warrant their paying. Also milk dealers will contract to take larger amounts of milk than their business needs, and are not able to handle the surplus to advantage. In the same way, milk dealers, in order to secure trade, will frequently cut prices until there is no profit realized from the transaction, or so little that it does not pay for the trouble of handling the trade. This is particularly true in the case of some restaurant and hotel trades.

Dealers in milk and dairy products are greatly handicapped by the perishability of the products handled. Good and efficient methods of refrigeration...
are absolutely essential and refrigeration is expensive. Milk itself is an excellent medium for bacteria which soon cause it to spoil, and a low temperature is imperative to prevent bacterial action.

Probably no one thing has caused more trouble or loss in the dairy business than a misunderstanding between the dairyman and the consumer, for certainly such a misunderstanding does exist. Everyone has for the past few years heard more or less about clean milk, and the dangers that lurk in dirty milk. Milk is one of our best foods, and hundreds of infants in New York State alone, are entirely dependent upon it. For this reason, if for no other, the conditions which surround milk production should be as cleanly and sanitary as possible. Oftentimes, however, the consumer does not realize that the demand for added cleanliness in milk production means an added expense to the producer, and this added expense must come from the pocket of the consumer. The consumer also makes many demands which are not consistent with good dairy practices. A case in point is the demand that milk must be delivered at the very early hours of the morning, long before people have arisen. This demand is made with the idea that milk delivered at this time is fresher than if delivered later in the day. As a matter of fact, the milk is usually from twelve to twenty-four hours older than it otherwise would be if delivered at reasonable hours, and after delivery the milk sits in the sun until the consumer sees fit to remove it. (See Figure 2). The hour at which this milk is delivered is so early that the bottles received by the customer on the previous day are not set out where they can be collected by the drivers, with the result that a second trip must be made in order to collect the bottles. Much more milk spoils than otherwise would it if it were fresher. All of these things add greatly to the cost of delivering to the consumer and for which he must pay.

We were one time told of a certain village in which the consumers demanded that the milk be delivered warm, the idea being that milk freshly drawn is warm, and therefore that milk delivered at a high temperature must be fresh. The milk dealers were obliged to warm the milk before delivery, thereby adding greatly to the cost of handling and injuring its keeping quality, since the high temperature was favorable for bacterial growth.

In many cases the milk producer does not understand the position of the consumer any better than his position is understood. It is a common remark of some dairymen that they have no trouble in using the milk produced in their own herd, and see no reason why other people should. Such dairymen forget that the milk which they produce must oftentimes travel hundreds of miles and may be from thirty-six to forty-eight hours old before it reaches the ultimate consumer. In such a case, even a moderate, initial bacterial contamination might increase to such an extent that by the time it reached the city consumer, it would be unfit for food. It cannot be denied that the milk producer has peculiarities and prejudices the same as has the consumer, and oftentimes these have stood in the way of financial betterment. We have stated that the production of clean milk costs more than the production of dirty milk, and this is true so far as complete equipment of a sanitary dairy is concerned. There are some things however, whose cost is comparatively slight which greatly aid in producing clean milk. One of these is the small top or covered milk pail (See Figure 1). Probably no one thing will do more towards aiding in the production of clean milk than will this simple and comparatively inexpensive piece of apparatus, yet many dairymen seem to have an inherent prejudice against it. We have yet to find a single dairyman who, after having given the sanitary milk pail a fair trial, would go back to the unsanitary type.
To be successful, the dairyman must produce a product of uniformly high quality, and no one who is producing dairy products of inferior quality has a right to complain of receiving low prices. It is a general rule that inferior products bring inferior prices. We recently met a dairyman who was selling butter far above the highest market quotations in a locality where most of the butter made was of very inferior quality, and sold to renovating plants instead of being put on the market as ordinary butter. Before working up his special trade, this particular dairyman was told that it would be an impossibility to obtain anything above the regular market price, as more than this had never been asked in that region. In less than three months he had twice as many orders as he could fill.

We call to mind the case of another milk producer, who was selling a good quality of milk at 8c per quart. After making a thorough canvass of his customers he decided that he could sell enough certified milk at 12c per quart to warrant the production of this grade of milk. In a short time he had a ready sale for all the milk he could produce. It cost him only one cent more per quart to produce the certified milk than it did the ordinary grade, and the three cents was added to the profit he formerly received.

It should be the aim of dairymen, collectively and individually, to do everything in their power to bring before the public the food value of dairy products. Merchants handling other lines of goods have for a long time used this method of bringing certain articles before the buying public in...
order to increase their sales. Certainly no kind of food stuff better warrants advertising than do dairy products. It is a well known fact among dairymen that the American people consume very little cheese, especially the soft and fancy cheeses. The U. S. Department of Agriculture has recently issued a communication to dairymen urging them to manufacture and bring before the public those kinds of cheese ordinarily imported from abroad. On account of the present European war, it will be a long time before European manufacturers can resume the making of these brands of cheese, and now is an opportunity for American cheese makers to secure this kind of trade.

Dairy products are not only good foods, but some of them, especially milk, are an absolute necessity. There was recently the prospect of a general railroad strike, and nearly all of the leading American newspapers in commenting on the prospect of such a strike, mentioned the fact that one of the most serious results would be the shortage of the milk supply in our larger cities. Both on account of this necessity of dairy products, and on account of their high food value, those dairymen who apply business methods to the production, manufacture and marketing of dairy products will profit financially.

THE LEVER EXTENSION ACT
What It Is, and How It Will Operate

By B. T. Galloway
Director, New York State College of Agriculture

For a number of years the need has been felt for more funds that might be used in extending or democratizing the accumulated knowledge on agricultural subjects. The Federal Government, through the Department of Agriculture, and the various States, through their agricultural colleges, have been engaged in numerous lines of extension activities. Large appropriations have been made by the Federal Government for demonstration work within the States. State legislatures have also made appropriations for this purpose, due to the demands on the part of the people for help other than could be given through publications, farmers' institutes, and other means.

Through efforts on the part of officers of the Federal Department of Agriculture and state agricultural colleges, a satisfactory cooperative plan for aiding extension was finally developed, resulting in the passage on May 8, 1914, of what has come to be known as the Smith-Lever Extension Act. This act provides for cooperative agricultural extension work between the agricultural colleges in the several States and the United States Department of Agriculture. It provides further that the cooperative agricultural extension work "shall consist in the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in several communities and impart to such persons information on said subjects through field demonstrations, publications, and otherwise." It is furthermore specifically provided that the work to be performed shall be mutually agreed upon by the Secretary of Agriculture and the state agricultural college, or colleges, receiving the benefits of the act.

It will be noted that the primary
The intent of the act is to give instruction and practical demonstrations to persons not attending nor resident in agricultural colleges. In other words, it is the intent of this act to make it practicable to carry to the people, on their own farms and in their own farm homes, accumulated agricultural information that will prove useful and helpful. The fundamental idea of the work is demonstrational; to teach by showing how to do things, rather than by talking about how to do things.

In order that the work may be satisfactorily administered, it is to be handled on a project basis; that is, each line of work is to be specifically and definitely set forth as a project, and when this project is agreed upon between the representatives of the Federal Department of Agriculture and the Agricultural college the work will proceed.

In order to meet the expenses of the work the Federal Government appropriates for the first year the sum of $480,000 or $10,000 for each State. This sum becomes a fixed appropriation, so that each State will receive annually $10,000 provided that the State Legislature assents to the provisions of the act. In addition to the $10,000, each State will receive after the first year, for seven years, an increased appropriation based on the relation that the rural population of the State has to the total rural population of all the States, as determined by the next preceding census. States with a large rural population, therefore, will receive proportionately larger amounts than those with a smaller rural population. It is also provided that after the first year each State shall, through the action of its legislature or from other sources, provide an amount equal to that furnished by the Federal Government.

It has been the desire of those in the Department of Agriculture charged with the administration of this and similar work, to bring about such harmonious relations in the handling of the Lever Act as will eliminate possibility of overlapping or conflict within the States. In order to accomplish this, there will be in each State, connected with the agricultural college, a recognized department or division with a proper officer in charge, through which all extension activities will be conducted. The projects already agreed upon by the State College of Agriculture (New York) and the Department of Agriculture at Washington, provide for cooperation in connection with the extension work in home economics, farm management, farm crops, and pomology.

As already indicated, under the terms of the Lever Act the amount contributed by the Federal Government for 1914-15 will be $10,000. Each year thereafter, for seven years, there will be appropriated an additional amount of $19,536. At the end of seven years, and for each succeeding year thereafter the State will receive $170,195 of federal funds. If a like amount is contributed annually by the College, the total annual appropriation at the end of seven years will be $340,390. The wording of the act is such that funds necessary in order to get the Federal funds may be appropriated by the Legislature, by counties, or by municipalities, or may be contributed by private individuals or groups of individuals. In all cases, however, the funds contributed within a State must be turned over to the State College of Agriculture, since it is the responsible agent for handling such funds under the terms of the act.
THE CLIMATE OF NEW YORK IN RELATION TO AGRICULTURE

ARTICLE No. 3

By Wilford M. Wilson

Professor of Meteorology, Cornell University

(EDITOR’S NOTE.—This is the third of a series of articles dealing with the agriculture of New York State. The series will be continued in the January issue.)

BROADLY speaking, the general type of farming in New York as well as elsewhere is determined mainly by the climate, the soil and the markets. Judicious management may increase the fertility of the soil, market facilities may be improved, but climate is permanent and uncontrollable. For this reason a crop scheme to be successful must fit into the climate of the locality. It should neither overlap the climate nor fall short of it, for a misfit in this respect invites loss, if not disaster.

That long experience has taught the farmers of New York the limitations and vicissitudes of its climate is evidenced by the success of its agriculture, but it cannot be doubted that a serious study of the climate for the past fifty years from the viewpoint of actual records would be helpful in supplementing experience, and in some instances probably suggestive of profitable modifications of crop management.

In approaching this subject it seems necessary to distinguish clearly between weather and climate in their relations to agriculture. By the term weather is meant the condition or state of the atmosphere at a given instant of time with respect to five things, namely, temperature, precipi-
A combination of these five elements constitutes the weather. Each element produces its effect on the growing plant, hence, its growth in a single day, so far as the weather is concerned, is a measure of the combined effect of the five elements for that day. Since this continues day by day from seed-time to harvest the yield at maturity is the product of the weather for the season.

Climate is a generalized summary of all the weather that has occurred at a given place during a long period of time. Since it includes all the weather its elements are the same as the weather elements but it deals mainly with averages and extremes instead of the conditions that exist for a single instant as does the weather. Hence, the average yield of a given crop, say for a period of 20 years, so far as related to these five factors, is a product of the climate for that period in the same way that the yield for a single season is the product of the weather for that season. When observations of the weather have been made daily for a period of 20 years or more the record usually will include all vicissitudes of weather likely to occur at that place. These data then may be arranged to show what the average and extremes of weather at that place have been, and, since there is no reason to believe that the past was different from the present, at least in historic times, it is safe to assume that similar conditions will continue to obtain in the future.

FACTORS THAT CONTROL CLIMATE.

The climate of a place mainly is the product of five factors, namely, the latitude or distance from the equator, the relative distribution of land and water, elevation above sea level, proximity to mountain ranges, and general surrounding topography.

Of these, latitude is the most important, because it determines both the intensity of the insolation (heat) received from the sun and its duration or the time the sun is above the horizon. Climate based upon distance from the equator is called solar climate.
The tropical, temperate and frigid zones are divisions of solar climate.

If the earth were level and homogeneous, that is all land or all water, the climate of all places equally distant from the equator would be identical, but the great diversity of physical environment along the parallels of latitude modifies profoundly the effect of the sun’s heat and thus gives widely differing climates to places equally distant from the equator. This effect of environment is called physical climate.

New York is included within about 4° of latitude which gives a mean annual temperature differing by about 4° F., between the northern and southern borders. This difference in solar climate, however, is small when compared with that resulting from the diverse topography of the State such as its lakes, valleys, plateaus, and mountain ranges. In fact there exist within the limits of the State nearly perfect types of the three grand divisions of physical climate, namely, marine, continental and mountain, represented by the marine climate of Long Island, the continental climate of the interior plateaus, and the mountainous climate of the Adirondack regions. Between these types and within the limits of the State may be found nearly every gradation of physical climate.

While the climate of localities within the regions noted conforms to a greater or less degree to the climatic type of the region, the physical environment of every locality, every farm, and indeed nearly every field of every farm is so diverse that each possesses an individual climate of its own that differs in some respects from that of every other locality, field or farm. This is recognized generally in practice when a hillside is selected for an orchard or a valley is avoided for crops liable to injury by frost.

Moreover, the relative importance of the four principal climatic elements in general agriculture, namely, temperature, rainfall, sunshine and wind, differ with different crops and at different stages of growth. For example, the rainfall of April, May and June makes the hay crop. Rainfall also is the controlling factor during the growing stage of corn, but temperature and sunshine bring the crop to maturity. In fruit culture the temperature during the dormant season, when winter-killing is likely to occur, and again during the blooming period often is a dominating factor. Thus at certain critical periods each crop is dominated by one or another climatic factor.

Manifestly it would not be possible at this time to undertake to treat the climate of New York in such detail. General principles as related to the several types of climate found in New York only can be discussed, and to the individual farmer must be left the task of applying these principles to the environment and crop scheme of his own farm.

CLIMATIC DIVISIONS OF NEW YORK.

For convenience in discussion, New York has been divided into ten climatic divisions, Fig. 1, the climate of each division being characterized by certain distinguishing features, resulting from its physical environment. For example, the climates of Long Island and the Great Lakes divisions are influenced mainly by contiguous water areas, while those of the plateau region approach the continental type, modified by elevation above sea level.

The effect of water, land, and elevation on the distribution of temperature is best illustrated by the average date of the last frost (temperature of 32°F.) in spring, Fig. 2, the first in fall, Fig. 3, and the average length (days) of the growing season, Fig. 4. Reference to Fig. 2 shows that for the average season freezing temperatures do not occur along the Great Lakes nor over the coastal region after May 1, while freezing weather is the rule over the eastern and western plateaus until May 20, and over the more ele-
FIG. 3.—AVERAGE DATE OF FIRST KILLING FROST IN FALL

FIG. 4.—AVERAGE NUMBER OF DAYS BETWEEN THE LAST FROST IN SPRING AND THE FIRST IN FALL
vated parts of the northern plateau until June 1, a difference of from 20 to 30 days in favor of those regions that are under the influence of bodies of water.

The effect of environment is emphasized still further by Fig. 3, which shows that the first freezing temperatures of fall occur on an average 20 to 40 days earlier over the elevated sections of the state than near the Lakes or along the coast.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

NORMAL ANNUAL PRECIPITATION IN NEW YORK
(From all records available.)

It also indicates clearly that the smaller lakes of the central part of the State, and even the larger rivers, such as the Hudson and Mohawk, exert a profound influence on the temperature over adjacent lands.

But any remaining doubt as to the dominating influence of these physical factors on local climate, so far as temperature is concerned, must be cleared away by an examination of Fig. 4, the average length of the growing season, which shows that there is a difference of 60 days in the length of the average growing season between the elevated parts of the northern plateau and the east shore of Lake Ontario, a difference of 50 days between the south shore of Lake Erie and the highlands of Allegany and Cattaraugus counties, and a difference of 60 to 80 days between the average season of the eastern plateau and that of Long Island.

To what degree and how far inland the tempering effect of a body of water is appreciable cannot be answered definitely. It depends upon three things, namely the volume of water, the direction of the prevailing winds, and the slope of the land away from the water. Other things being equal
it is obvious that the larger the body of water the greater its influence on the temperature conditions over adjacent lands. Since the prevailing winds in the latitude of New York are westerly, the east side of a lake enjoys a more even temperature and the largest immunity from frost. The influence of a body of water extends farther inland when the slope away from the water is gentle than when there is an abrupt rise. This is indicated by the rapid decrease in the resulting from the surrounding topography. As a rule valley bottoms and low lands are more frosty, and hence have a shorter season than the more elevated lands and hillsides. This would seem to contradict the conclusions drawn from the charts that the more elevated parts of the State are coldest and have the shortest season. It is true that the average temperature decreases with elevation at a rate of about 1° F. for each 300 feet rise, but there are times, particularly on clear quiet nights, which always favor frost, when this is reversed. At such times the strata of air near the ground may be 10° or 15° colder than the strata of air 40 or 50 feet above the surface. This is due in most cases to the drainage of the cold air away from the hills and its accumulation in the low places. Such low places, where the cold air accumulates, are called

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LOCAL DIFFERENCES IN TEMPERATURE.

There are often surprising differences in the temperature conditions of different parts of the same farm resulting from the surrounding topography. As a rule valley bottoms and low lands are more frosty, and hence have a shorter season than the more elevated lands and hillsides. This would seem to contradict the conclusions drawn from the charts that the more elevated parts of the State are coldest and have the shortest season. It is true that the average temperature decreases with elevation at a rate of about 1° F. for each 300 feet rise, but there are times, particularly on clear quiet nights, which always favor frost, when this is reversed. At such times the strata of air near the ground may be 10° or 15° colder than the strata of air 40 or 50 feet above the surface. This is due in most cases to the drainage of the cold air away from the hills and its accumulation in the low places. Such low places, where the cold air accumulates, are called

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NORMAL PRECIPITATION IN NEW YORK FOR APRIL, MAY, JUNE, JULY, AND AUGUST

- LESS THAN 14 INCHES
- 14 TO 16
- 16 TO 18
- OVER 20

FROM ALL RECORDS AVAILABLE
Relation of Average Rainfall for April May and June to Yield of Hay in New York.

"frost pockets" and should be avoided for orchards or tender crops. A walk over a farm at night often will reveal the location of "frost pockets" otherwise unsuspected. Farm buildings whenever possible should be located on a hillside where there is good air drainage. This insures good ventilation, a cool house, and cool barns at night.

RAINFALL IN NEW YORK.

The distribution of the annual precipitation for New York is shown by Fig. 5. There is a wide variation in the annual amount received in different parts of the State. The counties bordering on the south shore of Lake Ontario, parts of Yates, Livingston, and Ontario, and a narrow strip along the west shore of Lake Champlain receive the least, about 30 inches annually, while the greatest precipitation occurs over the plateau regions amounting to 40 or 50 inches annually. As in the case of the temperature, elevation and prevailing winds are the controlling factors in the distribution of rainfall, modified to some extent by the average path of cyclonic storms.

The effect of elevated lands is to increase the precipitation on their windward side, which in New York is toward the southwest, and to decrease it on the leeward side. This is the explanation for the comparatively heavy rainfall over the highlands of Allegany and Cattaraugus counties, the lighter rainfall in parts of Yates, Livingston, and Ontario counties, the heavy precipitation on the southwest slope of the Adirondacks, and the lighter rainfall along Lake Champlain.

The cause of the relatively low precipitation along the south shore of Lake Ontario is not so clear, but probably is due to the effect of the Lakes on the temperature and vapor content of the air in that vicinity.

The distribution of precipitation by months is quite uniform for the State, the minimum amount occurring generally during the winter and early spring months, with the maximum in May, June and July. The rainfall during the fall months is greater than during the winter months, but considerably less than that of May, June and July.

The precipitation during that part of the year when vegetation is dormant performs the important function of storing the soil with moisture, but the
rainfall during the growing season determines the crop yield, so far as this element is concerned. This may be best illustrated by Fig. 6, showing the relation of the total rainfall for April, May and June to the yield of hay in New York from 1888 to 1911 inclusive.

It is clear from the curves, indicating the total rainfall and the yield, that the relationship is a close one. Indeed, the discrepancies that appear in the curves emphasize this relationship when considered in connection with the precipitation for the individual months. For example, in 1909, when the rainfall for the three months was about 5% above normal, the yield fell off about 10% due to a drought that set in the last of May and continued through June. Again, in 1903, when April and May were dry months the rainfall for June saved the crop.

In considering the effect of the rainfall for the individual months it is rather surprising to find that the precipitation for April bears a closer relationship to the yield than that of either May or June when taken separately or indeed when taken together. It is also interesting to note that a normal amount of rain produces more than an average crop, as indicated by the fact that for 9 years, when the average rainfall was within 2% of the normal, the yield was more than 8% above average. The one exception appears in 1909, due to a large deficiency in the June rainfall. Moreover, that the crop does not utilize much more than the normal amount of rainfall seems to be borne out by the fact that for 7 years, when the rainfall was 27% above normal the yield was only about 5% above average. On the other hand a deficiency of rainfall produces a marked decrease in the yield. Serious deficiencies occurred in 4 out of the 23 years, the loss in yield for these years averaging about 32%.

It has been shown by several investigators that the yield of corn in the principal corn producing states is related closely to the total rainfall for the months of June, July, and August. The correlation is quite remarkable,
as shown by Fig. 7, the yield increasing and diminishing regularly with the increase and decrease of the rainfall. Contrary to general expectations, similar investigations with respect to temperature gave negative results. This does not mean that temperature is not important to this crop, but probably that the departure from the normal temperature in no instance was sufficient to produce a noticeable effect in the yield, and that always there is sufficient heat in the corn states to make a crop.

In New York the total rainfall for the three summer months is appreciably greater than over the so-called corn belt, and the distribution throughout the season is quite as favorable, but the relationship between the summer rainfall and the yield of corn in New York is lacking entirely, which means that, while the climate of New York is fitted for corn in one respect it is a misfit in other respects. It is a misfit so far as the length of the season between frosts is concerned, which really is a matter of temperature except possibly in a few favored regions such as Long Island and some of the southeastern counties, where the growing season approximates 200 days.

By selection and the breeding of quick maturing varieties, which may be considered as an attempt to overlap the climate, a profitable forage crop may be raised in many parts of the State, but always at a considerable risk.

While the two examples given merely serve to explain in a measure what every farmer knows, namely, that hay fits the climate of New York and that corn does not, such studies have a value, not alone as confirming experience, but as showing that there is reason to hope that further research may lead to discoveries of which experience as yet has given no hint.

EXPLANATION OF THE FRONTISPIECE

At the Faculty Club of the University of California, Dean Thomas F. Hunt gave a luncheon on Sept. 30th in honor of Dr. L. H. Bailey. Invited to be present were those Cornellians now on the agricultural faculty at California. Included in the group were three men who had acted as Dean and Director at Cornell and two who have held the same position at California. The CORNELL COUNTRYMAN was represented by two of its ex-editors.

Those in the group are, from left to right:
C. L. Roadhouse, Cornell '06, Assoc. Professor Veterinary Science at California.
Walter Mulford, Cornell '99, ex-Professor of Forestry at Cornell, now Professor of Forestry at California.
H. J. Webber, ex-Acting Dean and Director and Professor of Plant Breeding at Cornell, now Dean of the Graduate School of Tropical Agriculture, and Director of the Citrus Experiment Station at California.
E. J. Wickson, ex-Dean and Director at California, now Professor of Horticulture at California.
Isaac P. Roberts, ex-Dean and Director at Cornell, now resident at Palo Alto, California.
Liberty H. Bailey, ex-Dean and Director at Cornell.
Thomas F. Hunt, ex-Professor of Agronomy at Cornell, now Dean and Director at California.
A. V. Stubenrauch, Cornell '01, ex-Fellow in Horticulture at Cornell, now Professor of Pomology at California.
J. E. Coit, Cornell '06, ex-Editor Cornell Countryman ('95-'06), now Professor of Citiculture at California.
B. H. Crocheron, Cornell '08, ex-Editor Cornell Countryman ('06-'07), now State Leader and Ass't. Professor of Agricultural Extension in California.
C. M. Haring, Cornell '03, now Professor of Veterinary Science at California.
D. N. Morgan, Ass't. to the Dean at California.
J. T. Barrett, Cornell '10, now Professor of Plant Pathology at California.
AGRICULTURAL COMPETITIONS FOR BOYS AND GIRLS IN NEW YORK STATE

By Edward M. Tuttle
Assistant Professor of Rural Education, Cornell University

(Editor's Note—These competitions relate the school life to the community activities and develop the capacities of boys and girls through the doing of practical things under educational guidance.)

RURAL schools are rapidly coming to use the resources of the natural world and the activities of the farm and farm home to supplement formal book work. Practically all educators agree in the belief that such a combination produces a balanced and normal development of boys and girls in the open country. The senses, the hands, and the mind are trained together, contributing each to the others the elements of interest and impulse that are so vital to real progress. Particularly is this true of those phases of the work that tie the school and home life together and afford an opportunity for economic activity under educational direction.

The most serious handicap to the widespread introduction of natural history, agriculture, and home making into the schools is the lack of preparation in these subjects on the part of teachers. This is recognized by the teachers themselves, and they are using every opportunity to strengthen their knowledge. The New York State College of Agriculture has for some years placed in the hands of rural and elementary teachers subject matter in nature study and agriculture following the State Syllabus. The material is prepared by specialists in the various fields, and is compiled and edited by the Rural Education Department of the College in cooperation with the University of the State of New York. In addition to the aids to teachers, the College of Agriculture has published several numbers of the Cornell Rural School Leaflet each year for the boys and girls. These are designed to stimulate interest, to suggest concrete pieces of work, and to supplement the efforts of the teachers. During the past school year more than 172,000 children received the Leaflets.

All matters of educational policy in rural schools are under the direction of the University of the State of New York, and are developed through the local educational authorities—the district superintendents. The office of district superintendent of rural schools is an exceedingly important one carrying with it the responsibility for the education of the boys and girls in country districts, and appointment to this position is conditional, among other qualifications, on an examination in agriculture. A large number of the two hundred and seven district superintendents are alive to the need of connecting the school life with the rural environment and more and more work is being done in nature study, agriculture and home making as the teachers become better qualified to give instruction in these subjects.

One of the most effective ways of developing country life work and of increasing the knowledge and interest of teachers, children and parents is the organization of simple competitions among the boys and girls. These may assume a variety of forms. The children may work toward a fair at the local school, or prepare exhibits for township, supervisory district, county or state fairs, or for the Farmers' Week exhibition at the State College of Agriculture. The competitions may be between individuals, or between schools. The products may be judged solely on a basis of quality,
or there may be more elaborate competitions for older children based on a definitely outlined method of procedure and report. A phase of this type of work is the home project carried on by the high school boy or girl, by which credit is given for a complete piece of work done at home under the general direction and guidance of the teacher of agriculture. Broadly speaking, agricultural competitions are not limited to the growing of crops but include also poultry or other livestock raising, cooking, sewing, natural history collections, drawing, and in fact anything that bears relation to rural life.

Since the fundamental purpose of this competitive work is the development of boys and girls through the doing of practical things, it constitutes a real part of the educational life, and as such should be organized and directed by the established educational authorities. The district superintendents of schools by virtue of their office must bear the responsibility of any work with children of school age, and hence should assume the initiative and leadership in agricultural competitions in agriculture and domestic economy in rural districts. The organization of boys and girls into clubs for this purpose has been widespread throughout the country. It has been valuable as a propaganda movement. In such organization, however, the responsibility of the leadership has often fallen on persons who have the preparation to give subject matter instruction in agriculture and domestic economy, and they have been handicapped in this good work by the details of organization. Effort is being made, therefore, in New York...
York, to have the opportunity for better country living opened to all school children as a part of the daily work of the school rather than through isolated clubs. The school authorities are encouraged to undertake the organization of contest work and to prepare the way for persons in local, state, or national institutions who are qualified to contribute subject matter in agriculture and domestic economy.

That the schools of New York State beginning work with agricultural competitions the necessity of careful preparation has been recognized by the superintendents. The financial support of a sufficient number of persons in the district to provide for an adequate list of prizes and the payment of incidental expenses such as printing, and the like, is essential. It is generally found that for the first year the burden of expense falls on a few public spirited persons in the community, but that subsequently are capable of successfully working out fundamental ways of using helps in country life teaching has already been demonstrated. A year ago over fifty of the two hundred seven district superintendents conducted agricultural competitions of some kind and this year at least half have taken leadership in the movement. Many have used wisely all local, state, and federal aid, and the results have led us to consider the following points as valuable in the development of this educational work:

1. Preparation for competitions. In others become interested and it is possible to secure small contributions from a large number of persons rather than large contributions from a few, which is the ideal to be sought since it insures greater interest and cooperation on the part of the entire community.

2. Kinds of contests. The selection of the kinds of contests to be held is an important matter. It has been found best not to attempt too many the first year, but enough to afford an opportunity to both boys and girls of a wide range of ages. One or two
crop contests for quality; one for economic production, report and exhibit; a bread or cake contest; a simple sewing contest; and two or three competitions in natural history collections, drawing, and the like, make a good start for the work.

3. Follow up work. The cooperation of the teachers is most important to encourage the boys and girls to take part in the competitions and to instruct them as to the rules and regulations governing the work. The critical stage in all contests comes between the time of entry and the final exhibition of the product. During this period, which ordinarily occupies the summer season when the schools are not in session, it is very necessary to provide some sort of follow-up work to keep in touch with the contestants to prevent discouragement and withdrawal. The real educational value of the contest lies in the perseverance of the boy and girl in the face of difficulties. They need the counsel and advice of some older person who is interested. Teachers who remain in the district during the summer do excellent work of this kind. Effort is made on the part of the district superintendents and local teachers to find those older persons in the community who are interested, and who will agree to supervise a certain number of contestants during the season. For boys and girls who participate in crop growing or stock raising contests, some farmer who has made a success of these lines of work can usually be found, who will take the trouble to help the children along, not by actual manual assistance, but by manifestation of interest, and the giving of advice when it is obviously needed. Similarly in the case of contests for girls, the women of the community are glad to interest themselves. The Farm Bureau Manager of the county often renders invaluable assistance by giving subject matter instruction to superintendents and teachers, and, in some cases, to groups of contestants. He is able, also, to interest the older folk in the work and often acts as judge at the exhibition of products. It should be borne in mind that, no matter how good the exhibit at the end may be, if it does not represent a faithful completion of work according to the rules of the contest, it means little so far as the education of the boys and girls is concerned.

4. The exhibit and school fair. Manifestly the exhibit at the close of the contest is a most interesting phase of the work, and offers an occasion for both old and young, children, parents and teachers, to assemble and grow in community interest and spirit. Such a gathering can never be held on a large scale, and in fact it is coming to be felt by those who are closely following this type of work, that the small exhibits in the local schools are of most value. Often it is possible for two or more schools to combine in holding their exhibitions though it probably will never be wise to try to hold a general exhibit and school fair for a territory larger than a township. Of course there are competitions extending between townships, or even between supervisory districts, but these are largely for a few contestants who successfully pass in the local exhibits, and are rarely attended by a general gathering for educational purposes.

The same general conditions apply to both the local school and township fairs. Usually it has not been found wise to try to hold them for more than one day, and if the weather permits they take place in the out of doors. Very definite arrangements are necessary in preparing for such an exhibit, and it is always a valuable experience for the school at which the fair is to be held to anticipate as far as possible the necessities of the occasion and to provide for them. It sometimes has happened that the day of the exhibition has arrived without any preparation of tables or racks on which to set up the material, or of tents or shelters to protect it from the sun. Usually, also, there is some kind of program for the day to be followed, and a group of guards or marshals is needed to assist in taking care of the crowd.
and in helping with the actual labor of the occasion. This work may well be delegated to older boys and girls who often remain inert at such times and take very little part. They are interested if given a definite piece of work to do and the occasion passes off much more smoothly with such a corps of marshals available. Of course, there is always some one person who is responsible for the final working out of the day’s events and to whom others look for direction.

In the case of township fairs where there are a number of schools entered a most interesting and profitable addition to the program is a parade of school floats which have been previously prepared. The development of the float representing the school offers opportunity for group activity on the part of the children and offsets the tendency to individualism which is emphasized by the personal competitions. Both phases are valuable but they need to be combined. The greatest amount of originality is often manifested in the preparation of school floats; they represent some phase of rural life; the story of a crop, a farm operation, or a home activity; or, the artistic arrangement of natural material. There is endless opportunity to picture in this way the wholesome pastoral life of the open country.

At some school fairs a military band is hired for the day, but it usually costs a good deal of money, in the neighborhood of forty or fifty dollars, and it is a question whether the expenditure is warranted; in fact we have attended school fairs both with and without the band, and have found that more wholesome activity and better spirit usually prevails in the absence of the band. A most successful substitute for the band is the institution of group singing on the part of all present. It is made known during the previous year that certain songs will be sung on the occasion of the school fair, and the children learn the words and practice the tunes of these songs both at school and at home in preparation for the occasion. The successful carrying out of this part of the program depends on securing a person who can lead the singing and inspire the folk to take part with spirit.

It is usually customary to hold a basket picnic luncheon at the school

PART OF AN EXHIBIT FROM THE RURAL SCHOOLS OF THE FIFTH SUPERVISORY DISTRICT, STRUEN COUNTY
fair, and this feature of the occasion needs attention. Adequate preparation is necessary to take care of those in attendance during the luncheon hour by providing tables and chairs where needed, and, at any rate, by the selection of a suitable place for the picnic. It always happens that a large number of papers are strewn around the grounds after a basket picnic, and it is valuable experience for the younger children at the close of the day to have a spirited game in picking up these papers. In this way work becomes play and is made light by many hands.

At some school fairs athletic sports are included in the program, and it has been found that the less formal these events are the larger will be the number participating in them, and the more general the good fun and feeling derived. This does not mean that there is no preparation for the athletic events; in fact, someone must have them in charge who understands the organization of the activities; and some materials are always needed such as ropes for the tug-of-war and the slack rope climb, standards for the high jump, basket balls for the ball throwing contest, potatoes for the potato race, nails and hammer for the nail driving contest, tennis balls, base balls, and other material following the general line of sports to be taken up. A proper place for the athletics is carefully selected beforehand, and the corps of marshals spoken of above is especially valuable in assisting in the instruction of entrants.

On the whole, there is order without formality, and such a spirit of fun that a large number of persons are inspired to enter the games. Any effort to prevent a large proportion of the persons present spending the day merely as spectators, is worth while.

On the occasion of a school fair it is also usually customary to have one or two persons speak to the gathering. The first time such a fair is held it sometimes seems desirable to have a general talk that will help those present to a more definite understanding of the meaning of the occasion and the value of competitive work for the
boys and girls, but the great benefit to be derived is the actual instruction given to old and young in connection with the products exhibited. The exhibition of products is not isolated from the activities of the day, and judged by a committee of judges without any explanation of how the judging is done. Whoever addresses the gathering teaches definite things from the exhibit material, and shows how certain decisions are reached, and how improvement can be made by the exhibitors. This is necessary in order that there shall be intelligent progress from year to year, and it also does untold good in increasing the knowledge both of the contestants and of their elders in regard to the proper qualifications to be striven for in the goods exhibited. Whatever else takes place at these exhibitions there must be plenty of time for experts in agriculture and domestic economy to give instruction that will grow out of the products exhibited. In order to insure this some school fairs are largely confined to exhibit and instructional work, and at another season of the year a Field Day is held for the athletics and other social activities.

The exhibits are usually judged at some time during the day when there is comparative freedom from visitors, as for example, during the noon hour or while the athletic contests are being held. Later, judgments are explained and the prizes are awarded to the successful contestants. The character of the prize to be given is very important, and has to be seriously considered at the time of the organization of the contests early in the year. Obviously, a prize is a reward of merit for superior work done, and is of value aside from its intrinsic worth. There is a very praiseworthy tendency to substitute some permanent article in the place of the money prize, and in the long run such a substitution is found to be far more satisfactory. Articles that are given include pictures, books, magazine subscriptions, cups, medals, baskets, thimbles, scissors, spoons, live stock, farm tools and an almost endless series of things which the boy or girl appreciates and remembers in connection with the occasion. Sometimes the prize is not given outright, but is awarded to be held by the winner for a period of one year. At the next school fair it comes up for another award, and so on until some one shall have won it two or three times, as may have been previously agreed upon, when it finally becomes his property.

An important feature of the work with agricultural competitions is very often overlooked; namely, the possible economic value of the product that the contestant has produced aside from any prize which may be awarded. For example, if a boy entering a potato contest produces several bushels of potatoes, they have an economic value on the market, and his father or some other older person should see to it that the boy receives a just return in recognition of the work done. Similarly a girl who produces a garment, or a piece of cookery that has value should have recognition from whoever receives the benefit of the work. It is not just to ask the boys and girls to strive merely for the prize, and they should be given to understand that prize or no prize, they will receive proper recognition for actual work done providing it has economic value.

It is clear, then, that agricultural competitions and the resultant school fairs are exceedingly important not only to the boys and girls but to the whole community in stimulating greater interest in educational pursuits. The children do actual work under the direction of their teachers, and in accordance with instruction from specialists, and develop in knowledge and in character. The school fair is an occasion for friendly intercourse between the residents of a community, and it can be strengthened from year to year to contribute in definite and permanent ways to the lives of young and old.
THE PILGRIM THANKSGIVING DINNERS OF 1621

A Study of Plymouth Farm Resources and Economic Problems

By Blanche E. Hazard
Assistant Professor of Home Economics, Cornell University

YES, dinners rather than dinner, for that first year at Plymouth, the Pilgrims had a whole week of Thanksgiving days in October decreed by their governor, and fortunately they had as many dinners as days. Their Indian guests, "Massasoit, with some ninety men," they "entertained and feasted for three of these days."

To boys of the twentieth century, such a thing as a continuous series of 1621! What a problem to face, to solve!

To students in the Farm Course in our Agricultural College this problem would not seem so insurmountable for the very kernel of that course seems to be the idea of studying the resources of one's own farm, the supplies produced at one's back door, so to speak, and the ways of utilizing them. Our students are used to the problem already in theory if not in practice.

Thanksgiving dinners would seem a source of pure delight both in anticipation and in realization. To housekeepers, however, of any time or place, such a program would seem stupendous, and would present elements of dismay, even of consternation. Food enough for three such days! for seven such days! Yet these modern housekeepers besides their husband's purses, would have the resources of city or country markets to call upon by direct visit or by parcel post. They would have the traditions of their own and their husband's families to depend upon for suggestions as to menus. What of the Pilgrim housekeepers on the bleak New England shore in October of 1621? Although those Pilgrim housekeepers and their families had never taken such a farm course in a college, they were taking it that year in Plymouth under Dame Nature and Stern Necessity. Part of them, at least, as Separatists from England seeking homes in Holland from 1607 to 1620, had learned to face strange wants in foreign lands with both resourcefulness and courage that made for content if not for ease in life. Evidently the Pilgrim men and women took up this new task with the same "answerable courages" that Bradford had often enjoined upon them. The main idea of the governor's desire and decree was to hold a Thanksgiving or Harvest Festival which would be an appro-
priate and a happy event. The harvest was gathered and the fifty-one people alive out of the whole roll of one hundred and three that came off the Mayflower to build the new home at Plymouth, were both thankful for their lives and blessings and in need of relaxation. One of the chief blessings was, of course, the continuous friendliness of the Indians, so the Pilgrim gratitude to God took the form of a cordial invitation to these neighbors to join them in their festivities. Ninety stalwart Indian guests for whom to provide food! what a problem for the ten or eleven housekeepers! Probably the Pilgrims little realized when they gave their invitation that these Indians would in turn make the occasion into a sort of Methodist donation party and provide venison for themselves and for their hosts as well.

Would you have liked to be there at those Thanksgiving festivities? We can go now in imagination, if you wish. You know what your Pilgrim costume will be, and you can call yourselves by any of the familiar names, Gov. Wm. Bradford, John Alden, Myles Standish, or Isaac Allerton. You can be, for the nonce, Priscilla Mullins, or Widow Susanna White with little Peregrine in your arms, or Mistress Mary Brewster with your sons, Wrestling and Love, clinging to your skirts as you work. First of all, help to carry out Governor Bradford's idea of putting gratitude and rejoicing into the foreground, and your sorrows and losses, past and present hardships into the background. You will find these busy days, with no time to grumble over some undesirable people in your little colony whom you distrust. Even John Billington, "the scoundrel" who has been "shuffled into the company" by some unexpected turn of events, is to be treated as one of you in spirit as in body. It is to be a community festival. Everybody in your Pilgrim settlement at Plymouth is living each and every day from a common store house according to the hard and fast terms made with the Merchant Adventurers of London who loaned you the money for this colonizing venture.

During all the long stormy voyage across the Atlantic Ocean, from Southampton on August 5th to the tip of Cape Cod on Dec. 11th, you have seen the supply of butter, salt, and meal, of crackers and cheese, to say nothing of brandy and oil growing pitifully less. During all those dreary dark days of "the Spring Sickness" in this first year you have seen the last of the Old World food supplies relinquished by the strong to the weak and the dying, watching with hope against hope for the autumn harvest of corn and peas. The peas you have seen blossom and then become scorched by the sun so that the pods were not worth picking, but the corn has given a cheering goodly yield. The wild fruit has been plentiful and your children have led you frequently to new food supplies furnished at first hand by Nature. If we can believe the letters you have sent home to England and to the Leyden friends to cheer your relatives and to tempt new-comers, there has been an abundance of fish and fowl, and your Bay is full of lobsters. "In September," you said, "we took a hogshead of eels in a night with small labor and we can easily dig them out of their beds all the winter. We have mussels and shell fish at our door, and tho we have no oysters near, we can have them brought by the Indians when we will." From these same letters we know you have had a goodly supply of sallet (salad?) herbs, and fruit in abundance; "grapes, red and white, very sweet and strong; strawberries, gooseberries and raspberries; and plums, white, red and black, which are almost as good as damsons."

Four men in your small group are looking now for game, because Governor Bradford has definitely sent them out to shoot fowl for the festival. There are, as you know, only thirty-
two men and youths all told now, and you have had to grow accustomed to hunting. To encourage you in acquiring more skill, target practice is to be a prominent feature of your festivities this week just as it used to be in the English Wapentakes and in the archery fêtes in Holland. It takes the skill of your Indian guests, however, to secure the deer.

Just where the dinners were served,

whether in one common dining hall, improvised in the fort on the Hill, or in the seven private dwellings, has never been told. Four buildings, rough and rude of course, had been completed "for community use" by this date. Can you imagine them, made of logs with oiled paper for windows serving both to keep out the cold and to let in some light? The fowling pieces and halberds, perhaps the swords were stacked in the corner. The pure white homespun damask, pewter bowls and plates made the simple table furnishings. Perhaps the famous Elder Brewster, Governor Carver, and Edward Winslow chairs, which people see now at Memorial Hall in Plymouth, were used as seats of honor at these dinner tables. There was a plentiful supply of walnut trees from which they could make tables and cradles. Probably the same Peregrine White and Samuel Fuller cradles, so carefully preserved even until today were then rocking near the dinner tables on the puncheon floor. Certainly the busy housekeeper-mothers could not do their share of the cooking and hold their babies too.

According to the records, there were left in this Pilgrim community by October of 1621, four married women, eight girls and young women, two small girls, besides the thirty-two men and youths and five small boys. Many steps towards new family combinations, we can surmise, were taken in that week of pleasure and relaxation, of social life and common play. Too many men had been left widowers, too many wives had been left widows, too many small children had been left fatherless or orphans to make any long conventional mourning delay new marriages. The community as well as the individual good seemed to urge new family ties. Several families like the Martins, Tinklers, Rigdales, and Turners had been blotted out entirely. Master and Mistress Tilley had died leaving behind them their little cousins sent out from England in their care. Sixteen households, besides the four that were blotted out entirely, had lost one or more of their members.
Perhaps even then the sad lot of Priscilla Mullins who had lost father, mother, and brother in quick succession that spring had appealed to John Alden, who had been hired to come out as a cooper but was free now to return to England. He chose to stay and cast in his lot with the brave struggling colonists.

From economic as well as from social reasons the family grouping had to be carefully maintained. When you realize that there was, in this infant wilderness colony, no background of old family homes and community institutions like orphan asylums or almshouses, you realize also that all young people, all unmarried women, and all unmarried men with no one to keep house for them, must be grouped with some real family; some householder must take them under his roof.

What each one of these surviving fifty odd people should receive at the end of the seven years of common stock living could not fail to be a constant burning question. Some such vital economic problems could not be banished from the Thanksgiving dinner table talk even when the young people were present and even tho some members of the community felt an instinctive distrust of the others. Yet all knew the terms which the Pilgrim settlers had been obliged to accept. All the people of the colony, young and old were "to have their meat, drink, apparel, and all provisions out of the common stock and goods of the said Colony." "At the end of seven years the capital and profits (viz., the houses, lands, goods, and chattels) be equally divided between the Adventurers and the Planters." These two parties to the contract had agreed in the first place "that every person that goeth, being aged sixteen years and upwards, be rated at £10; and £10 to be accounted a single share; that he that goeth in person and furnisheth himself out with £10 either in money or other provisions be accounted as having £20 in stock; and in the division shall receive a double share."

Although one year had passed, the other six years looked like an unendurably long time of restraint and dependence. Even now the subject was rife of getting the Merchant Adventurers to change the clause about the division and the one compelling every man to work all the time for the common stock. They felt that at the end of seven years, the houses and garden plots should be left wholly to the planters, and that during the years of partnership each man should be allowed two days a week to work for his private good. Then they would gladly work the other days for the common store according to the provision which read, "During these seven years all profits and benefits that are gotten by trade, traffic, trucking, working, fishing, or any other means of any person or persons shall remain still in the Common Stock until Division."

In order to do this work effectively, careful choice had to be made in Holland and in England of the right men with both will and strength for manual work and with enterprising spirit. The contract had provided "that, at their coming, they choose out such a number of fit persons as may furnish their ships and boats for fishing upon the sea; employing the rest in their several faculties (trades) upon the land; as building houses, tilling and planting the ground, and making such commodities as shall be most useful for the colony."

Already they had a store of goods accumulated at Plymouth ready to send back to England by the next ship. This cargo was made up chiefly of beaver skins, prepared timber, clapboards and sassafras. It represented in the money values of that time about five hundred pounds and in ours it would mean ten thousand dollars worth. These Pilgrims had not been idle and we have every reason to believe that they had kept faith with each other and with the Merchant

Continued on page 138
At this time of year, when the students are being exhorted from all sides to enter student activities, it is well to sound a note of warning, lest we forget our primary purpose in being here. At Cornell, with its great diversity of interests and its magnitude of student activities, scholarship slips into the background at times.

Let us consider briefly the change of attitude that gradually becomes evident in a number of our students. Most of us come here imbued with a spirit of work (some, of course, do not, and such men would better have stayed away); we are resolved to study hard and to accomplish certain ends. But this good resolution, like many others, gradually wanes, due to various causes. Some men become too deeply engrossed in student activities. Such students are in most cases very able and hard workers, but their energies are directed too much to their activities.

On the other hand, certain students become "worked out" in their first year. To state the facts of the case plainly, they are lazy; they spend time that should be devoted to study in merely idling away their precious moments, accomplishing nothing. Their good intentions have gradually developed into a desire to slip thru as easily and smoothly, and with as little effort as possible. The stage is finally reached when such students choose their courses, not in reference to what they can get out of them, but with the idea of selecting subjects they can pass with the least studying. They take courses with no desire to increase their knowledge, but merely to have so many more hours toward graduation. What a waste of time!

How often do we hear students say that high marks count for nothing! Usually such is the argument weakly advanced by students who are receiving unsatisfactory grades. But even such students will have to admit that, no matter how much or how little a man's grading may show what he actually knows, it is the only way that his teachers have of judging his ability, and this certainly is very important.

In contrast to the two classes of students mentioned above—namely, those who can see nothing but student activities and those who are lazy—there is
another group, composed of men who devote their entire time to study. Such men the average student refers to more or less contemptuously as a "grind." This is unjust. If it is a man's honest opinion that he should devote all his energies to his university work and in this way help hold up the high standard of scholarship of our university, and he conscientiously follows out this opinion, he is in a way justified and his ideals should be respected. Such men are necessary to the university. Many of the most prominent persons in public life to-day, men who are doing the most for our nation, are men who, while at college, were what the students of to-day would probably call "grinds" and who were but slightly known among their fellow students. However, the men who do nothing but study would be better for the socializing effect of one activity properly pursued.

We do not want to be misunderstood in regard to our attitude toward student activities, for we feel that if a student can in any way do so, he should participate in some activity. He will be the better man for it. But scholarship comes before anything else.

The purpose of the university is to fit men for a useful life work. The world demands men who are well trained in their respective fields. If a university seeks a man to teach plant pathology, it wants a man who is in the true sense of the word a student and one who knows his subject. If a county wants a farm bureau agent, it looks for a man with a knowledge of agriculture. Thus, in all cases, it is the man with the information and the ability to utilize it who is in demand and who is making good.

This brings us to our concluding thought and the thought we most wish to leave. When trying to aid a senior or a graduate in finding employment, the faculty and the prospective employer judge the man, not by what he has done on the baseball diamond nor by the record he has made in track, but primarily by his scholarship and personality. Fortunate is the man who has found the happy mean between student activities and studious activities.

When a senior looks back over the four years of his college life, there are some few incidents that stand out most prominently in his memory. Perhaps he recalls some sensational football game, with the victory-winning touchdown in the last few minutes of play; or perhaps the thought of a monster athletic rally, with its tremendous enthusiasm, comes rushing back; or perhaps he remembers with rapture some master sending forth wondrous music from his ancient violin. But there remains uppermost in his memory two never-to-be-forgotten privileges—the association with his fellow students and the friendship of his professors. It is the latter, the acquaintance with the faculty, that we wish to discuss.

One objection that is advanced against a large university is the lack of personal contact between professor and student. This is due largely, not to the size of the university, but to the students themselves, for they fail to take advantage of the many opportunities that present themselves for becoming acquainted with their faculty. A professor announces to his classes that he reserves one evening a week for entertaining students, for he is anxious to
know them personally. How many men take advantage of this opportunity? Comparatively few. It certainly is a sad condition of affairs when a student will, shall we say, waste, an entire Saturday evening downtown, and then on Sunday evening, when the opportunity presents itself to visit one of the most illustrious men in the faculty, say he has too much to do. Such men are not awake to their opportunities and do not know just how much they are letting slip by. Sometimes it is argued that few occasions present themselves whereby a student can visit the best-known men in the faculty. In answer to this the following statement holds true—that a man recognizes very few opportunities unless he is constantly on the watch for them. Furthermore, even if an occasion does not come from an outside source, it is often possible for a man to make one for himself. Perhaps you ask how this can be done. Not long ago several students who are interested in the early history of the College of Agriculture took occasion to call on Dr. Andrew D. White. He seemed very glad to entertain them, and talked for over an hour on the early days of the college. Truly it was a wonderful evening and those students will never forget it. Dr. White stated that he is always glad to meet men who are interested in their work. If those students had waited for an opportunity to present itself they probably would never have had this chance.

Fellow students, we must make the most of our privileges while at college. There are many of which we cannot take advantage, but meeting the faculty and coming to know them personally is one that no student can afford to neglect. A word to the wise is sufficient.

Dean Galloway

On the evening of October 15, just before the first assembly, a committee of students representing the various organizations in the College of Agriculture waited on Dr. Galloway to express the gratification and satisfaction of the student body in having him as Dean. The committee assured him of the support and cooperation of the students, and expressed the hope that his work will be very interesting and enjoyable.

In a few very fitting words of response, Dr. Galloway stated that he is happy to be connected as he is with this College. Through the committee, he wishes to assure each student that he will be glad to assist him in any way he can. He wants to get personally acquainted with as many students as possible. "If you wish to see me at any time, come into the office and I will be glad to talk with you; or if you see me in the halls of the College or on the streets, stop me."

Dr. Galloway is a very democratic man and takes pleasure in helping others. Therefore the students should not fail to take advantage of his kind offer, and, when occasion presents itself, meet him and talk over their plans with him.

The COUNTRYMAN wishes to announce the following promotions on the staff: B. W. Kinne, '16, to the position of Assistant Business Manager, and C. W. Moore, '16, as Assistant Circulation Manager.
Dedication of the New Organ

The new $25,000 organ which was recently completed and occupies a conspicuous place in Bailey Hall, the new auditorium of the College of Agriculture, was officially dedicated October ninth in the presence of nearly 3,000 persons. Among those present were Dr. Andrew D. White, former president of the University, President Schurman and Mr. Andrew Carnegie, whose contributions assured the construction of the famous Raga Organ.

The program was divided into two parts. The first part consisted of selections by J. T. Quarles, the University organist and by W. C. Hammond, professor of music at the Mount Holyoke College, Mount Holyoke, Mass. The second part began with addresses by President Schurman and Mr. Carnegie. The University's notable guest said in part:

"I congratulate this University upon the gift bestowed upon you by the present Sage of Cornell, its President Emeritus, who has done so much in his long and elevated career to build this institution. The wish of Ezra Cornell, the founder of Cornell University, in conjunction with your sage, was noble. He desired that instruction should be on such terms as the limited means of the most humble could afford. Cornell performs this function as a State University. It is preeminent in physics and chemistry and in agricultural and engineering fields it is renowned. No wonder Cornell has more than 7,000 students, young men together with young women scattered through the various classes.

"We note that in Cornell the practical is never lost sight of, hence the success of so many Cornell graduates in the battle of life. We may be certain they will never forget their University and the unpayable debt they owe her. I predict that a long and illustrious history, copying its true past, lies in the future of Cornell, and such a record for your President Emeritus, as only the great and good can win, not forgetting as a worthy second your present President Schurman, who has for many years stamped his career indelibly on your triumphs.

"Your President suggested that I should say a few words to the young men. When a young man, or an old man either, can at night survey the acts of the day and receive this favorable verdict, 'I have done nothing this day which I need to conceal, nothing to regret, and I am glad that I did something to help my chums when help was needed and deserved, I have been of some use today in the world and now I can lay me down to sleep,' he has no cause to fear. Depend upon it also, you can never deceive this judge within and if he gives an adverse verdict this is final."

After prolonged cheering on the part of the audience, Dr. White was finally persuaded to come forward and speak. As he walked to the platform, the entire audience arose and remained standing until he finished talking.
This tribute was indeed very impressive.

Dr. White showed his appreciation of the organ by the following statement:

"First of all the many beautiful tributes which Cornell has received during the forty-six years since Ezra Cornell formally opened its doors we must place this noble music we have heard tonight. To me it is the fulfillment of many dreams that this great crown of music shall be added to all the other trophies of the University."

Many famous compositions were rendered by Mr. T. T. Noble, organist of St. Thomas Church, New York City, and Mr. Clarence Dickinson, organist of the Union Theological Seminary of New York City. During the rendering of Ave Maria by Mr. Dickinson, the chimes, which are located in the dome of the auditorium were played. Nothing but favorable criticism was accorded the organ by the visiting organists.

The organ itself is a large complicated piece of mechanism occupying over half of the stage. It was built by the J. W. Steere Company of Springfield, Mass. The organ has four manuals, seventy-nine speaking stops and all the necessary couplers of the modern organ. In brief the organ consists of a swell box located above the stage, a great and pedal organ at the side of the swell box and two organs in the adjoining wings. In addition to this there is an Echo Organ located in the dome. The organ contains upward of four thousand speaking pipes not including either the Cathedral Chimes in the Echo Organ or the Celesta in the choir organ.

This organ, which now becomes the property of the University, was given to the University on the eightieth birthday of Dr. White, and was erected with money from the contributions of the following men: Andrew Carnegie, H. R. Ickleheimer, '75, I. R. Place, '81, F. C. Stevens, '75, Frank Hiscock, '75, G. E. Molleson, C. S. Shepard and J. G. White, '85.

Dr. L. H. Bailey returned on Oct. 11, to Ithaca from his recent trip to New Zealand. He was to have attended a Science Congress held under the auspices of the New Zealand government, but owing to the outbreak of the European war this Congress could not be held.

The New Drill freshmen entering the Hall in September, 1915, will gaze with admiration on a magnificent new addition to the Campus buildings,—the $321,000 Drill Hall which will be ready for occupancy for the next freshman class. The structure will be a huge affair with dimensions of 412 feet long by 228 feet wide and will be located on the site of the present Fuertes Memorial Observatory just south of the Veterinary college buildings. It will be one of the finest buildings of its kind in this country.

The architectural scheme of the building is taken from the ancient Tudor castle. It will be constructed of stone from nearby quarries. In the basement will be located the rifle range and the immense locker room which is planned to accommodate 750 men. Two large stairways will lead to the second floor where the main Drill hall will be located. There will also be two large towers, one on each side of the main entrance with their interiors fitted up for lecture rooms.

The entire structure will be strictly modern in every respect and will have a very beautiful outward appearance which will blend well with the nearby buildings of the College of Agriculture.

The total cost of the hall will amount to $321,412, which comes well under the $350,000 allowed by the State.
Every one is interested to know how many Ag. men are out for Varsity teams and what share our College does in promoting such activities. Eleven out of forty-seven men on the Football squad are Ags, thirty-three out of the one hundred and five are out for Frosh crew, twenty-eight out of eighty for Varsity crews, and five out of twenty-five are out for coxswain.

The following tables show the registration in the different colleges for the past three years:

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Eleven out of twenty-four are on the Cross Country Squad. These are some of the most important fall activities and from the above one can easily see that Ag is well represented.

The College of Agriculture again leads all the other Colleges of the University in having the largest number of men enrolled. There are 1,549 men now in the College of Agriculture, an increase of nearly 200 over last year, not including the graduate students of which there is a large number.

The enrollment of the class of 1918 shows only a small increase over that of last year. In the class of 1917 there were 1,414 freshmen registered representing 45 states, 20 foreign countries and three dependencies of
the United States. In the class of 1918 there are 1,520 men, an increase of 106, representing 44 states, 14 foreign countries and three dependencies, which show a decrease in the number of foreign countries represented. Of all foreign countries, China, with 21 new men, has the largest representation in the University and also in the College of Agriculture. As is generally the case New York State leads the list with an enrollment of 711 in the College, which lacks but 12 of equalling the representation of the other 43 states combined. Pennsylvania follows with 102 and New Jersey with 75 students.

The musical clubs of The College have had an existence of about six years. During this time the degree of success with which it has met has varied somewhat both financially and otherwise, but continuously has there been success. Also the college has grown enormously and the number of men who try out for positions on the clubs has greatly increased. In the words of the present director, Mr. James T. Quarles, "the latent possibilities are enormous" and under this director's leadership and coaching, there is to be put forth a strong effort to develop such an organization as has previously been impossible. Many smaller colleges throughout the country are able to put out a very fine Glee Club, and this with much fewer advantages in the way of numbers to choose from, and ability of coach.

The present season has opened with an enrollment of 18 new men for whom Mr. Quarles has high hopes. There is still room however, for a few more men, it is being made clear that the work is serious and rules strict. The resulting advantages will be proportionately increased and the value of the training to the individual men, worthy of their time.

In this especial effort for real success, the management requests the earnest support of all, and feeling confident of this, a club of quality is predicted such as previously has been impossible.

Sage Cottage, now used by the College, which was provisionally organized last June. Miss A. J. Warner of the Home Economics Department had entire charge of the decorations, while Miss Martha Van Rensselaer and Miss Flora Rose, also of the Home Economics department are in charge of the dining room. Simple refreshments may be obtained there at any time, and dinners and luncheons will be served if ordered in advance.

The elections for the Student Honor Committee of the College of Agriculture, which were held in Roberts Hall recently, are as follows: seniors: T. B. Charles, W. V. Ellms, Miss M. L. Flumerfelt, D. S. Hatch and P. W. Wing; juniors: Miss G. S. Bates, R. G. Bird, Leslie Brown, Miss Helen Spalding and Stuart Wilson.

According to the rules governing the honor system the Faculty of the College of Agriculture nominate sixteen from the senior and junior classes, eight being selected from each class. The student body of the College by vote selects five seniors and five juniors from the sixteen nominees. These serve on the Student Honor Committee for one year.

Poultry Packers' Association of Ithaca

Continued on page 148
FORMER STUDENT NOTES

'02, M.S.A. — Edwin Jackson Kyle was born at Kyle, Texas, in 1876. He came to the Agricultural and Mechanical College of Texas in the fall of 1896, and was graduated in 1899 with the degree of B.S. in Agriculture. It is interesting to note in connection with the fact that he is making an eminent success as an agricultural leader, that he worked while a student, and at student labor in the Horticultural Department he earned most of the money necessary to carry him through the Texas College.

Because of his easy manner and yet strict sense of duty, Kyle was made the ranking officer of the Cadet Corps during his senior year at the Texas College. He was also President of the Senior Class, President of the Y.M.C.A., and valedictorian. Of his class he was second distinguished.

In the fall of 1899, after having been graduated in June, Kyle entered Cornell University, and was graduated in 1901 with the degree of B.S. in Agriculture. The following year, 1902, he was given the degree of M.S. in Agriculture from the same institution. He supplemented his college work with practical experience in horticulture. The summer of 1900 he spent on a fruit farm at Geneva, New York, and the following summer he was placed in charge of the shipment of fruits and vegetables from the orchards and gardens of Cornell University to the Pan-American Exposition at Buffalo, New York. In the summer of 1902 Kyle was made instructor in horticulture in charge of the Department, at the Agricultural and Mechanical College of Texas, and in the summer of 1903 was given the full professorship of Horticulture. With a view to keeping alive to the horticultural problems of the country as a whole Kyle has spent several summers making a special study of horticulture, in the various sections of the United States. In the summer of 1904 he went to California, and in addition to this he spent the summer of 1907 in the famous fruit regions of Colorado.

Kyle was selected Dean of the School of Agriculture at the Texas College in 1911, remaining, however, at the head of the Department of Horticulture.

In connection with the Texas Experiment Station Kyle has done special work on the peach, pecan, and a number of other crops. As a member of the Station Staff he wrote Bulletin No. 65, "The Tomato"; Bulletin No. 80, "Peach Growing in Texas", and for the State Department of Agriculture he wrote Bulletin No. 19, entitled "Pecans and Hickories in Texas."

Kyle was the first to begin the agitation of the introduction of Agriculture in the public schools of Texas. Upon this subject he has written a number of articles and delivered many addresses. He is a joint author of an elementary text-book on agriculture entitled "Fundamentals of Farming and Farm Life", by Kyle and Ellis.
Aside from his already successful career as a horticulturist, Kyle has lent his influence to other affairs of college life. He is the father of the idea of "High School Day" at the Agricultural and Mechanical College of Texas, whereby each year the leading high schools of the State are brought into closer relations with the College. As President of the A. & M. College Association he built up one of the best organizations and developed a series of the most successful football teams in the Southwest. It may be added, also, that the splendid athletic field at the Texas college takes its name, "Kyle Field," from him.

Kyle is an active worker, a man of good judgment, and generally succeeds at whatever he attempts. In Texas he is known as "a live wire." He is rendering his Texas Alma Mater an immense service as Professor of Horticulture and Dean of the School of Agriculture, and he is still a young man. More will be heard of him anon.

'85, B.S.A.—Some very interesting information has been received in a letter from C. E. Amoroso Lima, of Rio de Janeiro, Brazil. It follows in part:

"The College of Agriculture in 1885, and before, did not occupy a very large space in the University buildings, and, perhaps, as much in the University curriculum, but instruction was faithfully given, and earnestly received.

"The College of Agriculture itself consisted of the small class-room in Morrill Hall and the museum annexed to it, the farm and the old barn. The College of Veterinary Science, as such, did not really exist at that time, and formed one single College with that of Agriculture, and was poorly located in a small wing of the old Chemical Building, in which were also the Chemical Department and the College of Civil Engineering. The separation into two independent Colleges, as they now stand points to a more thorough dispensation of instruction in their respective courses.

"By a summary perusal of the official publication "The Buildings, Lands and Activities of the New York State College of Agriculture at Cornell University", and comparing with what was just said, one may easily realize the more than ten-fold progress made by the College of Agriculture and the University as a whole. The students were much fewer, but I am inclined to think, no less hopeful and earnest than at present. But what speaks best for the progress and growth of the College of Agriculture is, besides the unlocking of the Colleges of Agriculture and Veterinary Science, the establishment of Courses of Instruction at the College that were, some thirty years ago, but being overshadowed, and the departmental development of others."

Mr. Lima practiced agriculture in his own country and a record of his work has been presented to the College in the form of a manuscript headed "Diaris Rural."

'91, B.S.A., '92, M. S. A.—C. H. Royce is managing the Waddington Farm at Wheeling, West Virginia. He has been superintending farms ever since his graduation. In a recent letter, he said in part:

"I fell into this line of work of managing farms for other men immediately after leaving school and have followed it continuously ever since then. It is interesting business and one finds in it great scope for the operation of all education, skill and experience at his command. The training I received at Cornell under such men as Roberts, Law, Caldwell, Comstock, Bailey, and Wing, coupled with that given me by my father on the home farm in southeastern New York, have combined to help me meet the problems confronting me in my various fields of employment.

"When I first began managing farms I tried to put into practice the best known methods in dairying and the production of milk. The sanitary precautions taken on one of these farms were of such a nature that a
large number of physicians in New York city where the milk was sold, recommended the milk to their patients. Indeed practically all the requirements for what we now know as ‘certified milk’ were met and some of the first men to produce certified got their ideas from this farm.

“'I have long been identified with the Guernsey herd of cattle, and together with the man who is now the president of the American Guernsey Cattle Club, was able to induce the Club to start an honor roll for cows on the basis of production. These ‘House Lists’ as they were called were the precursor of what is now known as the Advanced Register, which in various forms has been adopted by all the leading dairy Breed associations.

"At Waddington, where I am now located, we are continuing the same kind of work, and are probably reaching out further from the farm by our methods than in any other place I have been before. Mr. Oglesby, the owner has put not only money, but thought and work into the problem of making West Virginia a good place for farmers.

"The senior Farm Adviser is a man you all know. . . . He is that splendid class mate of mine Professor Horace Atwood and he is doing good work for us as you might expect.

"While Father Time has been decorating my head with grey, there has grown up around my wife and myself four children, and I have taught them to believe that there is no University in the country like Cornell and no college of Agriculture in the world like hers. Some day you may see some of them in your midst.'"

'96, B.S., '97, M.S.A., '02, Ph.D.—Leroy Anderson first saw the light on a farm in the town of Tyre, Seneca County in the year 1866. He attended the district school, a mile from home until fourteen years of age and then he began "going to town to school". Two years he spent at Waterloo Union High School and one year at Seneca Falls Mynderse Academy. From the latter he graduated in 1885. The following winter he taught school in a country district in Junius and in June, 1886, was awarded the Cornell scholarship from Seneca County. He entered Cornell in September and made a fair record as a freshman. Finances kept him out the next year and he taught school in his home district. The fall of 1888 found him again at Cornell, this time to remain two years. As a sophomore he was elected treasurer of the Y. M. C. A. and in March of his Junior year he was made president of the same organization. Failing in health during the summer he did not return to college for five years, the major portion of which time was spent on the home farm. During this period he decided to be a farmer and in September, 1895, returned to Cornell for agricultural work. Near the close of that college year he was awarded the Fellowship in Agriculture, which meant another year in the University and this time specialization in Dairy Husbandry. After receiving the Master's degree in 1897 he was Assistant in Dairy Husbandry under Professor Wing until June, 1900.

In 1900, Mr. Anderson was called to the University of California as Instructor in Dairy Husbandry to begin a new department in that line. Two years later he was chosen to be Director of the California Polytechnic School, a new institution to be established at San Luis Obispo, and for which the legislature of 1901 had made an appropriation of $50,000. The school was opened in 1903 as a secondary institution to teach agriculture, mechanics and household arts, the first school of its kind west of the Rockies and probably the first in the United States to be established separately from another state institution. The work of the school was so successful that the Director was called back to the California University in January, 1908, to organize instruction in the new University Farm at Davis. In January, 1913, he took a leave of absence from the University and is trying his hand at actual farming on
a ranch of 4000 acres, of which he is manager, at El Casco, Riverside County, California.

Mr. Anderson received his Ph.D. in June, 1902, on the thesis "Some of the Influences Affecting the Secretion of Butter Fat". At the same time he was elected to the Cornell chapter of Sigma Xi.

Cornell men in the faculty of the University of California are as follows: B. I. Wheeler, President of the University; H. J. Webber, Director Citrus Experiment Station; T. F. Hunt, Dean and Director, of the Agricultural College; C. M. Haring, Professor of Veterinary Science; W. J. Taylor, Assistant Professor Veterinary Science; J. T. Barrett, Professor of Plant Pathology; C. O. Smith, Instructor in Plant Pathology; J. W. Gilmore, Professor of Agronomy; C. F. Shaw, Professor of Soil Technology; W. H. Arnold, Instructor in Chemistry; W. W. Bonns, Assistant Professor Pomology; B. H. Crocheron, Assistant Professor of Agricultural Extension; J. E. Dougherty, Assistant Professor Poultry; and a few others in different colleges of the University.

'04, B.S.A.—W. H. Thompson, since leaving Cornell has been in Europe. He first attended the University of Paris, where he studied for advanced degrees. Only two foreigners received degrees, he being one of the two, and standing second on the list. He is now in Cambridge University, England, studying Zoology.

'04, W.D.—H. I. Ayres has resigned his position in the Dairy Department at Cornell to accept the position of General Superintendent in the Dairy Department of Ayer Mac-Kinnery of Philadelphia.

'07, B.S.A.—John Shepard of Waco, Texas, has returned to Ithaca for special work in Irrigation Engineering. He has been engaged in this line of work in the Southwest and Northwest to quite a large extent.

'07, W.D.—Clayton Dutton is in his fifth year as State Cheese Inspector at South Otselic, N. Y.

'08, B.S.A.—Chester J. Hunn of the Federal Experiment Station at Honolulu, and for the past year Acting Horticulturist of that Station visited his parents in Ithaca in August. He has just resigned his position in Honolulu to become Professor of Horticulture in the Agricultural and Mechanical College at Mayaguez, Porto Rico.

'09, B.S.A.—Ernest L. Baker of Bliss, N. Y., succeeds Prof. Toan as head of the Department of Agriculture in the Perry High School. Since his graduation he has been the official tester for four cow testers' associations in Western New York and has also had practical experience in different branches of farming. While in College he assisted in the farm survey of Tompkins county and this work was so well thought of that it was embodied in a state bulletin. Prof. Baker secured his high school education at Belfast.

'09, B.S.A.—E. W. Mitchell, a prominent fruit grower of Kinderhook, N. Y., is doing a large amount of consultation work for city farmers.

'10, W.D.—Morris Quick is employed by the Sharples Separator Co. at Westchester, Pa.

'10, W.D.—Scott Carpenter is running a dairy farm at Adonis, Jefferson County, N. Y.

'10, B.S.A.—G. P. Scoville, who has been Farm Bureau Manager of Chemung Co. since April, 1912, has resigned to become a joint representative of the Federal Department of Agriculture and the Department of Farm Management at Cornell to do Farm Management demonstration work in this state. He has his headquarters in the College. Mr. Scoville began work on September first.

'10, W.P.—F. W. Kazmier left October 7th for Texas where he is to
assist in the establishment of a Poultry Husbandry Department in the State College.

'11, M.S.A.—C. Shamon Wright is in charge of the greenhouses, Plant Growing, Plant Breeding and all experimental work for the Joseph Campbell Co. at their farms at Riverton, N. J.

'11, B.S.A.—Thomas Bradlee, Director of Extension Service of the Vermont State College, was a recent visitor to Ithaca in his search for men for Farm Bureau positions in that state.

'11, B.S.A.—Thos. Elder is Director of the Agriculture Department of the Mount Herman, Mass. Boys' School. This department has one thousand acres of land, 130 head of Holsteins, one of the finest herds in the East, 200 head of swine, 50 acres of orchard, 900 young apple trees and many other fruits, 30 horses, and 5 good size barns. All the vegetables raised are used in the dining hall. The school, has an enrollment of 650 boys with a faculty of 50 and has 30 buildings on a 25 acre campus overlooking the Connecticut River. An agricultural building is planned for the near future. All work at this school is done by the boys.

'11, B.S.A.—Louis Fish, manager of the fruit farm of F. C. Clark at Kinderhook, N. Y., has leased a farm adapted to vegetable growing at Hartsdale, N. Y.

'11, B.S.A., '14, M.S.A.—Elizabeth F. Genung has resigned as Instructor of Bacteriology in the Department of Dairy Industry at Cornell to accept a position as teacher in the State Normal School at Cedar Falls, Iowa.

'09, M.S.A., '11, Ph.D.—C. N. Jensen, President of Brigham Young College, Logan, Utah, was a visitor at the College recently.

'11, Grad.—H. E. Ewing has been appointed Assistant Professor in Entomology in the Iowa State Agricultural College. Since 1911 Dr. Ewing has been connected with the Oregon State Agricultural College as an Investigator in Entomology.

'11, B.S.A.—Lloyd R. Simons who has been teacher of Agriculture at the Gowanda High School has been appointed Farm Bureau Manager of Nassau County, with headquarters at Mineola, Long Island.

'11, B.S.A.—E. W. Thurston has been special teacher of Agriculture at Lowville Academy, Lowville, N. Y. This school includes departments of Agriculture, Commerce, Home Economics, Training Classes and High School.

Ex. 11.—A. C. Wiechers is an assistant Patent Attorney for the Western Electric Company. His home address is 4 West 105th St., New York City.

'12, B.S.A.—David Elder has full charge of the Smith Industrial School, Northampton, Mass. All work there is done by the 60 boys in the school.

'12, B.S.A.—E. G. Brisner is an Instructor in Extension Teaching at the College.

'12, B.S.A.—A. M. Goodman is with the Dairy Dept., Dept. of Agriculture, Washington, D. C.

'12, B.S.A.—Leslie Hogue of Arcade, N. Y., and his father are engaged in the manufacture of cheese. This business embraces some twelve or fifteen factories. Mr. Hogue and his father have been studying the advisability of skimming fat from whey from which butter can be made. During the past summer they made thirty or forty pounds of whey butter. Fifty per cent. of the proceeds is paid to the farmer, the other 50 per cent. is retained by the cheese factory for the cost of manufacture and marketing.

'12, B.S.A.—W. H. Hook, formerly of an agricultural school at Ridgely, Maryland, began work on
April 15 as County Farm Bureau Agent of Ulster County, N. Y., with headquarters at Kingston.

'12, Sp.—Harry L. Page was married Wednesday, August 26th, to Lavina Kenyon at Preble, New York. They are now at home in Peekskill, New York.

'12, B.S.A.—J. A. Pulhamus is superintendent of the Northfield Semi-nary Farm at Northfield, Mass. The farm is one of 500 acres with 120 cattle at present, 30% of which are registered and Mr. Pulhamus is working into Holsteins and new grades. There are also 30 horses. All the crops are used by the school.

'12, B.S. '13, M.S.—R. S. Washburn, has done research work since graduation. He is now in the Bureau of Plant Industry at Washington, D.C.

'13, M.F.—J. P. Kinney is with the Office of Indian Affairs of the U. S. Department of the Interior, Washington, D. C.

'13.—B. H. Austen has been Assistant Superintendent of a large sugar plantation in Hawaii. He expects to return to Western New York this fall to take up fruit growing.

'13.—T. M. Avery was appointed on March 1st as County Farm Bureau Agent for Delaware County. He is doing good work and getting things well organized.

'13, B.S.—S. E. Brink is running a Holstein Dairy Farm of 125 acres at Hill Crest Farm which has been in the family since 1799.

'13, B.S.—Jesse Brown is stationed at Hilton, N. Y., at a sub-station of the Eastern Fruit and Produce Exchange of Rochester. B. L. Crandall is also with the same company.

'13, B.S.—Burr C. Copley was back for the summer school this past summer, when he took work in manual training and mechanical drawing. Now he is teaching these subjects along with agriculture at the Monticello High School in this state. After graduating from College, he worked on his own farm and did some cow testing on the side.

'13, B.S.—News was received of the death of Mr. Bert C. Georgia at Amherst, Mass., on Sunday afternoon, May 24th, 1914. Mr. Georgia graduated in February, 1913. He specialized in vegetable gardening and was appointed to take charge of that department at the Massachusetts Agricultural College. He was engaged in developing the work of this department and was highly successful. His personality was such as to render him very popular with his staff and students. Mr. Georgia was born and brought up nine miles west of Ithaca.

'13, B.S.A., '14, M.F.—P. C. King, sailed from San Francisco on September 26 for China, where he will be employed by the Chinese Government in forestry work.

'13, B.S., '14, M.F.—C. S. Hahn and H. E. Schmelter, '13, are with Clark and Lyford, Forest Engineers, Vancouver, B. C.

'13, B.S.A.—E. F. Lewis has been advanced from teacher of Agriculture to Principal of Schools at DeRuyter, New York.

'13, B.S.—B. H. Paul is at present doing some work for the New York State Conservation Commission. He will return to Ithaca to complete his work for the degree of Master in Forestry.

'13, B.S.A.—Reginald Reeve, after spending a year in the Wahn College at Honolulu as Instructor, is now General Sales Agent of a swamp reclaiming concern at Batavia, N. Y.

'13, B.S.—Edmund Stevens has a position at Claxton, Georgia, with the Department of Soils Survey.

'13, B.S.—S. H. Thompson is at the Iowa State College of Agriculture,
occupying the position of Farm Efficiency Demonstrator.

The past summer gave many of the men in forestry opportunity to gain practical field experience before taking their fifth year of work. Among these E. J. Irish, A. B., '12, J. D. Lamont, B.S., '13, and M. E. Krueger, B.S.A., '13, were with the United States Forest Service on the California National Forest, engaged in reconnaissance work; H. B. Steer, B.S., '13, was with the Maryland State Board of Forestry; C. H. Guise, B.S., '13, was with the State Forester of Massachusetts; Wm. McCarthy, B.S., '13, was engaged in cruising timber in Tennessee; Harold Chadderdon, B.S., '13, in marking timber for the Adirondack League Club near Old Forge, N. Y.; and E. G. Bishop, B.S., '13, with P. A. McDonald, Superintendent of Devil's Lake State Park, Wisconsin.

Of these, all but Krueger, Chadderdon and Bishop are now registered in the Graduate School for the degree of Master in Forestry.

'14.—Max F. Abell has been appointed to an Assistantship in Farm Crops at Ohio State University for 1914-15.

'14, B.S.—G. R. Attride is managing a farm in West Virginia. Tobacco is his most important crop.

'14, B.S.—T. A. Baker has been appointed an Instructor in the Animal Husbandry Department at Cornell.

'14, B.S.—H. D. Bauder is now at Fort Plains, N. Y., engaged in general farming with his father. On September 2, he was married to Louise Brown of Crystal Run, N. Y.

'14, B.S.—Smith G. Beilby has charge of the agricultural department of the Pine Plains High School.

'14, B.S.—E. S. Bird is an Instructor at the Rome Custodial Asylum at Rome, N. Y.

'14, B.S.—H. E. Baldinger has been appointed Instructor of Dairy Industry under Professor B. P. Lockwood at the Mass. State College of Agriculture. He is replacing Ivan McKellip, '12, who resigned in order to accept a position with the Bureau of Animal Industry at Washington, D. C.

'14, B.S.—T. J. Conway has been appointed Assistant in Poultry Husbandry at the Texas Experiment Station. This is a new venture at the station and Conway will have charge of all the experimental and investigational work. A letter, which follows in part shows that Conway likes his work very much. He writes: "Texas is a wonderful place and I am becoming more pleased with it each day. The climate is fine. With its great expanse of territory and great variation of climate Texas is able to raise about every plant of any economic importance to man. Cotton is the big crop, particularly in this section, but this year the European War has crippled the market so that at present it is very hard to sell the product at even a slight profit. This makes it very hard for the most of the small growers whose sole income is their cotton. There is great agitation now throughout the state to limit the acreage of cotton. The State is even trying to pass laws to that effect, limiting each grower to 20 acres of it or each county to 1,000 bales.

"At the Experimental Station here, poultry is an entirely new venture and everyone is quite interested in it. Right now we are expecting to start a campaign to have the farmers raise more poultry as one of the ways to make up for the reduced acreage of cotton."

'14, B.S.—Arnold E. Davis plans to go in partnership with his father. He will live in Livonia, N. Y., with Continued on page 142
The Cornell Countryman 135

B. P. Cogswell's Silo, Auburn, N. Y.

Auburn, N. Y., Nov. 26, 1912.

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These two preparations are the result of my lifetime experience as a doctor of veterinary science, a doctor of medicine and successful stock raiser. Dr. Hess Stock Tonic will put your animals in a thriving condition, make the ailing ones healthy and expel the worms. Contains tonics to aid digestion and appetite; blood builders to enrich and tone the blood; laxatives for regulating the bowels and vermifuges to expel worms.

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Dr. Hess Dip and Disinfectant destroys disease germs, foul odors, and is an effective remedy for parasitic skin diseases. For cleansing hog pens, stables, barns, outhouses, sinks, drains, troughs, garbage cans, etc. Put it in the hog wallows, sprinkle it around the poultry houses—use it wherever there are foul odors, filth, lice, scab, sheep ticks, mange, etc. It is non-poisonous and non-irritating; always uniform in strength and one gallon makes 75 to 100 gallons of solution.

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The above dependable and scientific preparations are never peddled—sold only by reputable dealers whom you know. I save you peddler's wagon, team and traveling expenses, as these prices prove: Dr. Hess Stock Tonic, 2-lb. pail, $1.60; 100-lb. sack, $5.00; smaller packages as low as 50c (except in Canada and the extreme West and South). Dr. Hess Dip and Disinfectant is sold in pint bottles, quart and gallon cans, also in barrels.

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Adventurers. The joint stock experiment had been working out more peacefully and successfully than its forerunner had done in Jamestown, Virginia, where poor Capt. Maria Wingfield had to defend himself from a false charge. "It is further said I did much banquet and ryot. I never had but one squirrel roasted, whereof I gave part to Mr. Ratcliff, then sick; yet was that squirrel given to me."

In the course of conversation during the Thanksgiving dinners we can well imagine long, earnest, even heated discussions of all this division question, and of ways and means of inducing suitable laboring men and acceptable colonists to come to Plymouth. The prospect of the fur trade to the North about Massachusetts Bay held them long enough to give time for reminiscing about various hunting and trading trips they had already undertaken. From the hunting, the talk must have trailed off to the trip of discovery along the Cape in the shallop while the women waited in the Mayflower riding at anchor within the Bay. There had never been such a good or such a natural opportunity to tell the humorous, picturesque details of that exploring trip, when the Pilgrim men in their search for a suitable site and drinking water for their settlement had traced the footsteps of deer to brooks and inland ponds, and come across Indian corn buried in sand and under mats, but never met a human being. Two facts had dashed all these details from their minds upon their return. One, the women had to relate,—the tragic death by drowning of Dorothy Bradford, the governor's wife; and the men's own report that at Plymouth harbor they had found at last a desirable site to which they would immediately take the Mayflower and the colonists.

Talk about the so-called Capt. Jones' plot, whereby the Captain of the Mayflower had kept the Pilgrims out of the Hudson region in return for a bribe given by the Dutch, was probably going on quietly in some corners; but not openly, for the Pilgrim leaders refused to believe the plot and discomfited its further discussion. They knew too well that the 'roaring terrors' of the sea out by what we know to-day as Pollock's Rip, off Nantucket Island, had made them urge Capt. Jones to put into the safe bay where they had come to anchor December eleventh.

What if these brave settlers could have had a wireless message, that Harvest Festival week, to tell them that the 'Fortune' with thirty-five well strong colonists on board was so far on its way from England that she would reach the New England shore on November ninth! Would not their Thanksgiving cheer have been complete, and a memory of the joyous return of hope and zest, at the prospect of renewing acquaintance with English friends, have clung like a persistent, though elusive, aroma about their recollections of the first Thanksgiving Dinners at Plymouth.

*This study is based upon contemporary journals, letters, and documents of the Pilgrim Fathers. Readers will find many of them reprinted in Arber's story of the Pilgrim Fathers, 1600-1623, pub. by Houghton Mifflin & Co. in Boston and by Ward and Downey in London. The author wishes she could also share with them the vivid memories of her summer visits at Plymouth and at the Cape Cod Pageant where Pilgrim life was portrayed.

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Geese.

Four Good Records by S. C. White Leghorns

<table>
<thead>
<tr>
<th>Breed</th>
<th>Eggs laid 1st year</th>
<th>Eggs laid 2nd year</th>
<th>Eggs laid 3rd year</th>
<th>Total Eggs laid 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>200</td>
<td>191</td>
<td>648</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>131</td>
<td>136</td>
<td>539</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>190</td>
<td>166</td>
<td>165</td>
<td>522</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>192</td>
<td>198</td>
<td>220</td>
<td>610</td>
</tr>
</tbody>
</table>

Market Eggs, Poult, Feathers, etc. are always available at the Sales Room.

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

In writing to advertisers please mention The Cornell Countryman
charge of that farm and also others at Little Falls, N. Y., either he or his father will always be at Livonia while the other is supervising work on the other farms. Davis intends to rent an old orchard and renovate it. He has been judging cattle as a side line, serving as judge of all the cattle at the County Fair at Hemlock this year.

Mr. Frisbie Addressing Farmers.

'B. S.—The COUNTRYMAN is in receipt of a letter from W. G. Frisbie, parts of which follow:

"My location is in the southwestern part of Chautauqua county at Clymer, N. Y., where I am teaching Vocational Agriculture in the public high school. This section is mainly a dairy region, with potatoes, cabbage and hay for cash crops. An intense interest is being shown by the community in the redirection of the school. Only a very small number of students go on to higher institutions, and the fashion has been to drop out at the age of fourteen to sixteen.

"The class in farm mechanics has built six carpenter benches, with mortised joints and tool drawers. On Saturday, October 10, the school held a community fair, and Farmers' Day, attended by over 500 people. About $30 worth of premiums for farm produce, household and school work were contributed by the business men of the section. The display of fruit, vegetables, and grain was large, and of good quality.

(Continued on page 144)
We will be pleased to send the booklet by return mail upon receipt of your letter or postal request.

We can't tell you all the good points about the F. B. Groff Simplicity Cow Milkers in this advertisement. You can get this information from our booklet however, which will convince you that we have the best milker on the market. Bear in mind that this is the only machine that the cow controls her own relief by the flow of her milk.

F. Groff & Son
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Desirable Farms for Sale in the Kinderhook Fruit Belt

100 acre hill farm, $3,600
124 acre general farm, $5,000
65 acre fruit and poultry farm, $6,000
100 acre Gentleman's Home, with tools, $7,500
243 acre bargain, $10,500
190 acre general farm, with 10 acres of orchard, $11,000
200 acre Hudson River Estate, $23,500

Address
RURAL LIFE CO.
Kinderhook, N. Y.

Established 1824
KELLOGGS & MILLER
Amsterdam, N. Y.
Manufacturers of
Pure (OLD PROCESS) Oil Meal

We use only the best grade of Flaxseed and our products are free from admixtures of any kind. Our oil-cake meal is very high in protein. Wonderful results are realized from its use as a feeding commodity.

Write for Prices

In writing to advertisers please mention The Cornell Countryman
Professor H. B. Knapp held the close attention of a large audience, by his instructive address on the orchard.

"Plans are being matured for a practical course in farm accounting and soils, for farmers, during the winter season."

'14, B.S.—L. E. Harvey has been appointed an instructor in the Farm Management Department.

'14, B.S.—Ray Huey, has just accepted charge of the agricultural department at the Spencerport High School.

'14, B.S.—L. L. Hull is working his home farm at Spencer, N. Y., on shares with his father. It is a general farm of 180 acres.

'14, B.S.—H. F. Keyes is a Farm Efficiency Demonstrator at the Connecticut State College of Agriculture.

'14, B.S.—H. C. Knandel is Instructor and County Adviser of Poultry Husbandry at the Bristol County Agriculture School, Berkley, Mass., which is a secondary agricultural school of 35 boys. Mr. Knandel also teaches botany, chemistry and parliamentary law. The school owns 110 acres, and has 200 Rhode Island Red hens. When Mr. Knandel took charge, these were giving 25 eggs a day, but by feeding the Cornell rations, the number was raised to 85 a day. There is also a 5 acre orchard which has produced a large crop of extra fine fruit after being renovated. The work is done by the boys; each boy carries on a poultry or fruit problem at his home farm. Work has been begun upon a new agricultural building to cost $40,000.

'14, B.S.—N. Kopeloff has a Fellowship at the present time in the New Jersey Experiment Station under J. G. Lipman.

(Continued on page 146.)

Watch Your Poultry Gain in Weight! Count Your Increase in Eggs!

Those are the tests of a good poultry feed. H-O Scratching Feed makes "workers." Notice its splendid balance of all clean grain. (Guaranteed Analysis Tag on every bag.)

The only scratching feed which contains hulled oats.

Write for sample and prices.

H-O POULTRY FEEDS INCLUDE
H-O Scratching Feed
H-O Poultry Feed  H-O Chick Feed
H-O Steam-Cooked Chick Feed
H-O Dry Poultry Mash

The H-O Company
Mills, BUFFALO, N. Y.

J. J. Campbell
General Sales Agent
Hartford, Conn.

THIS BRAND HAS ESTABLISHED A NEW STANDARD FOR
Trade Mark Registered

VIM

PURE BEEF CRACKLINGS
BEEF SCRAP
THE FLAVELL CO.
ASBURY PARK, N. J.
THE PROPER CARE OF MILK UTENSILS

The difference between poor milk and good milk may result from the way you clean the milk utensils.

All college authorities and expert dairy officials are unanimous in their belief that Indian in circle

is essential to the proper care of milk utensils and that it should be used throughout the dairy and creamery for all cleaning purposes. You will not only find Wyandotte Dairyman’s Cleaner and Cleanser a better cleaner than ordinary agents, but one that is far more pleasant to use. It quickly removes sour milk taints, keeping everything sweet and wholesome. At the same time you will be rid of soap odors for Wyandotte Dairyman’s Cleaner and Cleanser contains no fats or oils to produce soapy films or grease.

This same cleaning material is used by 85% of all butter and cheese makers besides thousands of milk dealers, creamery patrons and milk producers. Ask your dealer or write your dairy supply house.


This Cleaner has been awarded the highest prize wherever exhibited.

In writing to advertisers please mention The Cornell Countryman

THE KENT Vacuum Groomer

It provides the better way. Animals are fond of being cleaned with it. Time, labor and expense saved. Increased results obtained. Adapted to all kinds of power.

Write for our booklet and particulars.

The Kent Vacuum Cleaner Co.

Rome, New York

Residence machines also manufactured
Former Student Notes  
(Continued from page 144)

'14, B.S.—Sidney C. Leet is at present Bacteriologist and Chemist for the White Cross Dairy Co., Frederick, Maryland.

'14, B.S.—H. A. D. Leggett is Agricultural Instructor of Poultry, Olericulture and allied courses in the Vocational School at Springfield, Mass. He is also adviser of Garden and Poultry Interests for Springfield. His work in this capacity is to visit any of the 1,800 people who have vegetables or any of the 3,000 poultry owners who experience troubles, to assist them and suggest improvements. His address is 52 Boy street.

'14, B.S.—Alexander W. Lurie has accepted a position in the Department of Horticulture at the University of Maine, at Orono.

'14, B.S.—William Myers, who was working for the government this summer, is now acting as an Instructor in the Farm Management Department.

'14, B.S.—Robert Teal is a Farm Bureau Agent for Cayuga County.

'14, B.S.—W. H. Upson, after working on a fruit farm near North Rose, N. Y., this summer, has secured a position on a fruit farm in Virginia. He will take up this work in November.

'14, B.S.—A. W. Van Benschoten is now manager of his father’s farm in Delaware County.

'14, Grad.—E. D. Vosbury is with the United States Department of Agriculture, and is located at present in Idaho, doing investigational work on fruit storage and transportation. While at Cornell, Vosbury served as Associate Editor of The Cornell Countryman.

'14, B.S.—M. C. Wilson, Assistant Manager of the Tompkins Co. Farm Bureau since March 1st, has resigned to accept a position in the Farm Management Demonstration work in the United States Department of Agriculture.

The Hotel of American Ideals

HOTEL POWHATAN
WASHINGTON, D. C.

Best Located Hotel in Washington
New and Absolutely Fireproof
Refined   Elegant
EUROPEAN PLAN
Rooms, detached bath, $1.50, $2.00 up
Rooms, private bath, $2.50, $3.00 up
Write for souvenir booklet "B" with map

Clifford M. Lewis
Manager

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In a healthful locality; offering the advantages of practical farm land within two hours of our greatest city, with assured value enhancement; acknowledged fruit land and entrancing natural country

Prices range from ten to one hundred dollars per acre, with liberal terms. Among my patrons are several former Cornell students.

Edgar L. Hoag
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Short Course Men

have always realized what a saving on laundry bills has meant. They and many others have done this by patronizing us. We offer to them the work and service of one of the finest equipped laundries in this section of the State, at rates made possible only by an enterprise "Distinctly Student."

Phone or call for your "S" Bag.

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M. L. CAREY, '15
Both Phones

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STUDENT SUPPLY STORES

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Westinghouse Mazda Lamps

Don't Spoil Your Eyes

Get The Light of Lights

In writing to advertisers please mention The Cornell Countryman
of management have been developed by the Poultry Department so that it now feels the farmers should take the active management of the organization. In the future the business policies of the Association will be directed by a manager who will have his office down town in Ithaca. The department hopes to assist the people of the State to find an outlet for poultry products. With this end in view they have started a card index Sales Division in which consumers and producers are urged to register. While the Poultry Department takes no responsibility for the reliability of registered parties, the index is open to the public and undoubtedly will prove of great value.

Rural Problems Study Class

A very important announcement to the students who are interested in the betterment of conditions in the rural communities, was recently made stating that the College of Agriculture and the Cornell Christian Association are cooperating in giving a course in "Rural Problems" in Barnes Hall, Sundays at 12 o'clock. The class is open throughout the winter. The committee in charge consists of B. W. Kinne, chairman, D. S. Hatch, Leslie Brown, Ralph Parker, J. R. DuFloo and W. B. Combs, assisted by Dr. A. W. Gilbert and B. W. Shaper.

The average Cornellian from a city home or a home in a prosperous countryside is almost totally ignorant of some of the startling conditions which exist in a great many rural communities in this country and for that reason will find absorbing interest in some of the problems which will be discussed. It is a known fact to those who have looked into the matter that here in some of the hilly sections of New York State are conditions which equal those of the mountains of Virginia and which presents an excellent opportunity to the agricultural missionary. For instance take the rural school problem. New York State ranks among the very best in regard to education and spends immense sums for teachers' salaries in district schools. But a great amount of this effort is wasted, if the residents of the district, instead of visiting the school and lending kindly criticism to the often inexperienced teacher, sit around the supper table and find fault with her methods, while the children, who have forwarded the somewhat biased evidence, are interested spectators. To create a healthy interest of the countryside toward the district school is one of the first rural problems.

Other subjects that will come up are the country church, farmhouse sanitation, prevention of sickness, rural amusements and in short every problem of rural life that will help make this a course of lectures well worth attending.
MRS. MARTIN is a 
Castle House 
Instructor

The Classes at the Martin Academy 
are taught according to The Castle Method

A new term for beginners in dancing starts 
Monday evening, Nov. 9th, from 7:30 to 9 o'clock. Private lessons given at any hour of 
the day or evening.

Beginners classes meet every Monday and 
Friday evenings, from 7:30 to 9. One term 
of ten lessons — $6.00. Six private lessons— 
$6.00 Office hours 9 A. M. to 9 P. M.

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Dancing Academy 
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Ithaca Phone 709-C Bell Phone 242-W

EXPERT DANCING 
made possible by using 
Columbia Dance Instruction Records 
covering Waltz—Hesitation—Maxixe—One-step—Tango

dance records are recorded under the personal supervision of 
America's greatest dancing master, G. Hepburn Wilson, and 
approved by such famous dancers as Pavlova, Joan Sawyer, 
Vernon Castle and others.

COLUMBIA Grafonolas and Records sold by 
DAVIS-BROWN ELECTRIC CO. 
213 EAST STATE STREET Three Doors West of Ithaca Hotel

Note—We have just received a supply of New "Fox Trots."
The Union Central Life Insurance Company

DONALD McPherson, Agent

Is the only American Company that owns $76,000,000 of farm mortgages

Medical Examiner:
Dr. Floyd R. Wright
414 Eddy Street
BOTH PHONES

New York Life Insurance Company

C. H. Webster, Agent

Office: Student Supply Store
Residence: 121 Catherine St.

Both Phones

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38 Years experience tracking barns
Equipping over 8,000 barns with Hay Carriers. An acquaintance with more farmers. The installing of more special work in fine large barns than any other man is the record of our Mr. J. A. Cross. We give estimates and advice as to the best methods free.
Send for Circular and such other information you may desire.
J. A. CROSS HINGED EXTENSION CO. Fultonville, N. Y.

We Do Your Mending Free

Forest City Laundry
E. M. MERRILL

BAGS FREE

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DRY GOODS at the TODD COMPANY
—120 EAST STATE STREET—

Former Students! Keep in touch with the College. Write and let us know what you are doing—your friends want to hear about you.

One Dollar will send the Countryman to you for a year.

W. H. Sisson

Custom Made Clothes

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Pick Up a Few Pieces

of your broken Glasses and bring them to me, in less time than you think I'll grind new lenses, use your old mounting, adjust your glasses perfectly and you are ready to see clearly once more.

Whenever repairs on old glasses are necessary or new ones needed, call on

WILSON OPTICAL CO.

Store 208 E. State St.
BOOK REVIEWS


This book takes up the various farm crops, corn, wheat, oats, barley, rye, rice and buckwheat. Also chapters are devoted to the perennial and annual grasses, the legumes, root and fiber crops and potatoes.

THE PRINCIPLES OF IRRIGATION PRACTICE, (Rural Textbook Series), by John S. Widtsoe. Published by the McMillan Company. Price $1.75 net.

This volume deals with the subject of irrigation in all its phases in a very thorough manner with the object of explaining the relation of water to soil and plants. Chapters are devoted to the methods of irrigation in humid as well as arid districts, the bad practices of irrigation and the instruments used. A large number of illustrations aid in the explanation of the subject.

TEXTBOOK OF GRASSES, (Rural Textbook Series), by H. S. Hitchcock. Published by the McMillan Company. Price $1.50 net.

This textbook is divided into two parts, part one dealing with the economic importance and the various uses of grasses and the second part is devoted to the grasses in regard to their botanical classification.

KELLY'S TREES

Guaranteed to "Make Good."

That means a lot to every buyer—guaranteed Sturdy, Healthy and true to name by a firm that has been growing trees right for 28 years—Apple, Peach, Plum, Cherry and Quince Trees, also small fruits and Ornamental Stock.

Direct to you at Grower's Prices

Quality before price is our motto, but our personal supervision of all trees from our nurseries to you, together with up-to-date facilities, enables us to sell Kelly's Trees at low prices.

Our catalog tells all about our trees and prices. It is our only salesman and you can order from the catalog just as well as if you visited us here in Dansville—Why not do both? Write for catalog today. It's worth while.

KELLY BROS, Wholesale Nurseries
221 Main St., Dansville, N. Y.

You'll never regret planting Kelly's Trees.

How and When To Spray

This Book Mailed Free

40 pages of practical information, written in a way you can understand and use. Gives spray calendar, spray formulas. Describes which mixtures to use, to fight any certain pests on apple and other fruit trees, bush fruits, grapes, vegetable crops, etc. Tells how to prepare stock solutions, how to apply, which type of sprayer to use. Shows most practical sprayers, both hand and power. Get this valuable Free book today.

 Goulds Mfg. Co.
Largest Makers of Pumps for Every purpose.
16 W. Fall St. SENECA FALLS, N. Y.

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While it is true that no known treatment or remedy will dislodge all the different kinds of worms that infest sheep, it is nevertheless true that SAL-VET will keep sheep in condition to thrive better, and saves hundreds that would otherwise succumb to the multiplying hordes of stomach and intestinal worms.

Mr. J. H. Leet, of Chas. Leet & Sons, Mantua, Ohio, writes: "I consider SAL-VET the salvation of the sheep in America, and we recommend its constant use to our customers, as well as to others."

Mr. Henry L. Wardwell, Springfield Center, N.Y., says of SAL-VET: "We have used SAL-VET as a preventive of worms in our flock of sheep, and have great faith in it. We keep it before them all the time, both when on pasture and when in the barn."

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Tell me how many head of stock you have and I'll ship you enough SAL-VET—no money down—to feed your stock for 60 days. Simply pay the freight charges on arrival—feed the SAL-VET as directed. It does not do all I claim I'll cancel the charge and you won't owe me one cent.

Sidney R. Feil, Pres.
THE S. R. FEIL CO.
Manufacturing Chemists
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134 East State Street  
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Retailing, Wholesaling, and Jobbing Grocers

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has purchased from
THE AMERICAN COTTON OIL COMPANY
the well-known brand

"American Red Tag Cotton Seed Meal"

The Manufacture and sale of this brand
will hereafter be exclusively by the

Union Seed and Fertilizer Company

Below is shown a fac-simile of the Red Tag
which will be attached to each bag of

"American Red Tag Cotton Seed Meal"

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You are certainly after the business.
WE ARE!
We want your business. We are well equipped and know how.
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Supplies for Agricultural Students
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We bind theses, notes, etc.

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For Plumbing, Gas Fitting Steam and Water Heating, Gas, Steam and Water Supplies
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Pianos, Mandolins, Guitars, Banjos, Ukeleles, Violins
Rented or Sold on Easy Payments. "Songs of Cornell." All
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instruments at lowest prices.

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135-137 East State Street Established 1836
Capital $100,000 Surplus and Undivided Profits $165,000
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THE FIRST NATIONAL BANK
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Capital, Surplus and Profits $350,000 Oldest National Bank
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ITHACA SAVINGS BANK
Incorporated 1868
Tioga Street, cor. Seneca Ithaca, N. Y.

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go to
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Wise THE PRINTER
is at your service for all classes of
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High Class TAILORS
Note—If you desire a medium price suit anywhere from $20 to $30, we ask you to look this Special Department over.
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In 1913 eighteen Jersey cows were officially tested which averaged 12 years and 7 months of age. Average milk production 8617 lbs. Average butter fat 387 lbs. Longevity, Constitution and Economic Production are Jersey characteristics.

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Good Work—Prompt Delivery
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All the leading makes
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204 N. TIOGA STREET
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Quality and Service Unexcelled

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Music Every Evening

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Everybody's  -  -  -  1.50
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THE CORNELL COUNTRYMAN  -  Ithaca, N. Y.

Order Now—Today!
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<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover, Photo by Troy</td>
<td></td>
<td>174</td>
</tr>
<tr>
<td>Frontispiece</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedication</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>The Relation of Ezra Cornell to the College of Agriculture</td>
<td>A. D. White</td>
<td>177</td>
</tr>
<tr>
<td>Pioneer Days in Agriculture</td>
<td>I. P. Roberts</td>
<td>191</td>
</tr>
<tr>
<td>The Later Financial and Physical Development of the College of Agriculture</td>
<td>L. H. Bailey</td>
<td>195</td>
</tr>
<tr>
<td>The New York State College of Agriculture in its Relation to Agricultural Progress in the United States</td>
<td>A. C. True</td>
<td>199</td>
</tr>
<tr>
<td>The Development of the Faculty</td>
<td>A. J. Lamoureux</td>
<td>201</td>
</tr>
<tr>
<td>The Development of the Experiment Station</td>
<td>J. H. Comstock</td>
<td>207</td>
</tr>
<tr>
<td>The Development of the Courses of Instruction</td>
<td>G. N. Lauman</td>
<td>211</td>
</tr>
<tr>
<td>The Development of the Graduate Work</td>
<td>W. A. Riley</td>
<td>213</td>
</tr>
<tr>
<td>The Development of the Land and the College Farms</td>
<td>J. L. Stone</td>
<td>214</td>
</tr>
<tr>
<td>The Extension Work at the College</td>
<td>C. H. Tuck</td>
<td>217</td>
</tr>
<tr>
<td>Home Economics in the College of Agriculture</td>
<td>Martha VanRensselaer</td>
<td>220</td>
</tr>
<tr>
<td>Editorials</td>
<td></td>
<td>222</td>
</tr>
<tr>
<td>Reminiscences of Early Cornell Days</td>
<td>W. R. Lazenby</td>
<td>224</td>
</tr>
<tr>
<td>Some Cornell Boys I Have Known</td>
<td>B. T. Galloway</td>
<td>227</td>
</tr>
<tr>
<td>Student Activities of the College</td>
<td>J. E. Rice</td>
<td>230</td>
</tr>
</tbody>
</table>
ISAAC PHILLIPS ROBERTS
1873 PIONEER 1903

TO YOU WE DEDICATE THIS ISSUE OF THE CORNELL COUNTRYMAN, AS THE EXPRESSION OF THE LOVE AND ESTEEM OF THE STUDENT BODY OF THE COLLEGE OF AGRICULTURE, WHO, AS THE YEARS GO BY, SEE YOUR PORTRAIT DAILY IN THE ASSEMBLY HALL AND LEARN TO PRIZE THE SUBSTANTIAL WORK YOU DID WHEN WORK WAS DIFFICULT AND REWARDS WERE SLOW. ALL YOUR OLD STUDENTS AND ASSOCIATES, IN MANY RESPONSIBLE PLACES IN THE WORLD, WILL JOIN WITH US IN THIS GREETING AND REMEMBRANCE.
The Old Wooden Bridge on Central Ave. Spanning Ravine South of Sage Cottage was torn down by Students on Hallow‘een, 1882.
IN speaking of Mr. Ezra Cornell's connection with the College of Agriculture, I confess to you frankly that I am under one disability: to my great regret, I have never known practically anything of farm life. It is a singular thing that Cornell University, including its Agricultural College, involved the necessity of my making an address before the Legislature and other bodies on Cornell, but my training had been such that during the whole 20 years of my Presidency of the University, I doubt whether I could have told wheat from barley, on the other side of the fence. That is where my education was neglected. Therefore, although there will be details regarding Mr. Cornell's efficiency in regard to agriculture and agricultural matters, where I shall be at some loss, yet I think that I can give the main points of those things that are necessary to an understanding of what has been done by him, and the impulse he gave to the College of Agriculture, and to the proper position of agriculture in the State of New York and in the Union.

Mr. Cornell, as probably all of you are aware, was brought up on a farm in Westchester County in this state, and when he came to manhood, he struck out for himself. He was brought up a member of the Society of Friends, well and carefully instructed in the proper theory of his duties to the Almighty and to his fellow men. He made his way northward and westward, stopped in Syracuse for a short time, where he was cheated out of his wages; and as he did not like the place, went on to Ithaca, where he fell in with various men whom he liked. He was born, as I say, on a farm; he was brought up among the surroundings of farmers, and he afterwards preserved a great taste for everything connected with agriculture. But he was still more of a mechanic, and a very good mechanic, than he was farmer: it may be because he did not go into farming to any extent at first. He was employed in various mechanical matters, among them, very important ones, and it was soon found that he was a man of decided skill, an excellent workman, conscientious, of strong character, and with a great deal of foresight. He soon was at work upon the most important things that were being done in this community at that time. One of the things where he made his mark was in the large wood mill which stood where Cascadilla now stands. His employer was Mr. Eddy, after whom Eddy Street is named. Mr. Cornell was devoted to his work, he helped to bring the whole factory into shape and speedily became the foremost man in the whole concern.

Mr. Cornell was interested in various matters: his interest in agriculture always remained, and curiously enough, the invention that paved the
The way to his very large fortune and his public life, and his public-spirited efforts, was the invention and development of a plow. He worked away, as Thomas Jefferson did, at the mould board of a plow. Mr. Cornell invented a plow, and started out to sell patent rights for it. He went through various parts of the North, and at last reached Maine,—somewhere near Portsmouth, I think,—and he called on a noted man who had become interested in the Morse telegraph, Mr. F. O. G. Smith, very widely known as "Fog." Smith. Mr. Cornell went to his office, understanding that he was interested in public works and invention, and tried to interest him in this plow. When Mr. Cornell came in, Mr. Smith was lying on the floor of his office upon a great number of plans and drawings, and when Mr. Cornell presented his idea of a plow exclaimed, "I have nothing to do with plows, but if a man will come along and help me in laying a new telegraph wire from Washington to Baltimore, I will talk with him." Congress had made a small appropriation, although it was thought to be a wild goose sort of chase. Considerable opposition was made to carrying the proposed telegraph which Professor Morse had invented, from Washington to Baltimore, and no other way was thought of except to have the wires insulated, wound in silk thread, and put into a leaden pipe sunk in the ground. Mr. Smith, it appears, was one of the contractors for laying the trench of the pipe, and he discovered that there was danger of his losing considerable money in it. Mr. Cornell said to him: "Mr. Smith, I will supply you with a plow that shall dig the trench, that shall lay the lead pipe with wires in it, and that shall cover it up again." Mr. Smith did not at first believe him, but Mr. Cornell explained how he proposed to do it, which was, to make a modification of a plow for laying drain tiles which he had heard of in England, a very heavy plow, of course, that would dig out a deep trench and then with a sort of a hose cart following it, on which was wound the leaden pipe containing the two wires, lay the pipe.

At first Mr. Smith could not believe it, but Mr. Cornell was so lucid in his explanations, and so urgent in his arguments, that he finally agreed to pay Mr. Cornell the necessary expense of making the plow, and if he succeeded, to give him a bonus of $100. Mr. Cornell went at it, the plow was found to work, and it was taken to Washington. Professor Morse, Mr. Smith and others were on the ground to see the trial of the plow, which had a great number of horses attached to it, Mr. Cornell being the driver. They started out, the plow with the hose cart back of it, and then the mould board back of the cart to scoop the earth back into the trench. The horses were rather lively and started pretty quickly. The machine was thrown about a good deal, and presently disappeared over a knoll in front of the committee, who when they caught up, notified Mr. Cornell that it was evidently a thing that would not work, that it was thrown about too much, and that the laying of the wires could not proceed in that way. Mr. Cornell said, "Why, it has succeeded."

"What do you mean by that?" said Mr. Morse.

Mr. Cornell said, "The wire is laid. If you will take a stick and poke the earth over, you will find your wires at the bottom of the trench." That turned out to be true, and the result was that they paid him for his work.

But very soon Mr. Cornell lost all faith in that way of laying wires, for the insulation was very poor, and grew less and less effective every day. Matters were stopped. I think, for the winter and Mr. Cornell settled down in Washington. He was a man of very small means at that time, and was obliged to provide for himself and his family on wages paid by the company. He drew books from the various libraries, everything he could find on the subject of electricity, and made himself quite an electrician for those days. In the spring, when they started again, it was found that the
This plate was made from the last photograph of the Founder, taken in the early summer of 1874, at the request of some of the students.
insulation had the same trouble, was decreasing in effectiveness all the time, and Mr. Cornell openly avowed his belief that it would be better to string the wires upon poles. There was a great deal of opposition to that, but one day Professor Morse, having come to acquiesce in Mr. Cornell's idea, asked Mr. Cornell if he thought that he could gain some time so that some experiments could be tried with wires strung from poles, and whether he could do it so as not to disturb public confidence, because it was very clear that the appropriation made was not sufficient for carrying out their plans. Mr. Cornell told Mr. Morse that he thought he could, and Mr. Morse bade him go ahead and do as he proposed. At that, Mr. Cornell started up his great team of horses,—I think there were 6 or 8 horses,—and ran the plow deliberately into a boulder, and smashed up the cutting part of the plow. The general public knew that a mishap had occurred to the machinery, and thought that they had stopped for repairs. Then Mr. Cornell went on, began with poles, strung the wires with such insulators as he had secured, and kept right on to success. There was never any more talking about the machine for laying the pipe in the ground.

All the men who formed the company soon saw that he knew what he was about, that he had strong common sense, and that he also was a perfectly straight, clear-headed, honest man. That was the making of him, for the result was that they found it was better to deal with Mr. Cornell in charge of the whole matter than with anybody else. It seemed unfortunate at the time that they could not pay him money just as soon as the company was formed; rather, they were obliged to pay him mainly in the stock of the companies which were formed, and there were times when he really suffered privations. I was once told by a man who knew him in those days, that he was talking with Mr. Cornell as to the mode of getting wires up in the city of New York, for there was difficulty in getting them strung through the streets and over the houses. As they were talking, Mr. Cornell looked down and said: "Why, there is a ten cent piece." He stooped down and picked it up, saying: "Now I am sure of dinner. I was not sure of it before."

He also, when he had accumulated a little more money, and had secured credit, stretched some wires of his own where his foresight showed him that they would be needed in the future of the telegraph. There was quite a long time when it was purely speculative: a good many people interested in it became alarmed and sold out their stock for a mere song, but he clung to all his. He foresaw that there was to be a great future for the telegraph and he built these lines of his own, which must eventually come into any great trunk line. Finally, the whole thing became a success, the great Western Union Company was formed, and he found himself a very wealthy man, with an income which amounted, after a few years, to about a million dollars a year. It was perfectly legitimate income, and honestly gained.

In 1851, he and Mrs. Cornell made a visit to Europe, going through the first international exposition ever held, that at London, in Hyde Park, the one thing he wished above all to see. His knowledge of mechanics and his knowledge of agriculture was such that both these fields interested him greatly. But curiously enough, he seemed to interest himself more in agriculture at that time than in me-
Ihe Cornell Countryman

chanical things. He visited a very famous institution, the experimental estate of Lawes and Gilbert, at Rothamsted.

Mr. Cornell was greatly interested in that estate. Such splendid agriculture made a very great impression upon him, and on his return he took pains to do something in an agricultural way in the neighborhood of Ithaca.

He had bought this property on the hills here, as his own farm, his principal place of residence being downtown. He sent home everything he could find that he thought would be of real value to agricultural development. He sent home a great lot of the very choicest Short Horn cattle. Then he sent home fruit trees. His grounds up here were covered with different kinds of fruit trees from France. There were pear trees also, and lots of other kinds. Curiously enough he sent over a quantity of English elms, which afterwards became the approach to the stone house he built. We all joked with him because the English elms are by no means so beautiful or graceful as the American elms. Mr. Cornell used to laugh about his English elm experiment.

Mr. Cornell became known throughout the State. He then began to take an interest in the State Agricultural Society, and interested himself in the formation of the State Agricultural College, which was then located at Ovid, on Seneca Lake. Now, in order to understand his career, it is necessary to say a word in regard to the development of that Agricultural College. Probably most, even all of you, are aware that along about 1860, there was introduced into the Congress of the United States, in the House of Representatives, a bill for the establishment of colleges of agriculture and the mechanical arts. That was not merely the title of the bill. The bill was very much broader than that. It was introduced and championed by

His Durhams were famous throughout the state and his herd was one of the three or four best in the State. He also sent for a lot of Southdown sheep. Goldwin Smith used to say that it was absurd to make boasts regarding the roast beef of Old England, that the roast beef in New York City was quite as good and that England was the great mutton country. The Southdown sheep were very famous. The result was that Ithaca had for several years the best mutton in the State, so noted indeed, that it was sent to the great market at New York City.

THE CORNELL COUNTRYMAN

MORRILL, MCGRAW, WHITE AND FRANKLIN

His Durhams were famous throughout the state and his herd was one of the three or four best in the State. He also sent for a lot of Southdown sheep. Goldwin Smith used to say that it was absurd to make boasts regarding the roast beef of Old England, that the roast beef in New York City was quite as good and that England was the great mutton country. The Southdown sheep were very famous. The result was that Ithaca had for several years the best mutton in the State, so noted indeed, that it was sent to the great market at New York City.
Mr. Justin Morrill, of Vermont, one of the finest and noblest men I have ever known.

He carried his bill through the house, but it was vetoed by James Buchanan. Then Mr. Morrill had it transferred to the Senate, where he reintroduced the bill, championed it, and after a great deal of opposition (mainly from the states' rights men) carried it, Mr. Buchanan, though in many respects a very superior man, whole thing. People did not quite understand what it was all for, but there were sharp men who did see what it meant. Just at that time, a gentleman in the Legislature of this state took measures to have the high school or academy at the end of Seneca Lake at Watkins established as a college under the name of The People's College, and a great ado was made about it: Mark Hopkins, of Williams College, was called to make the open-

never could find warrant in the Constitution for many things that the nation needed. Luckily, Mr. Lincoln had been elected, and he signed the bill. So there was appropriated to every state in this Union an amount of public land, which in those days was very largely timber land and farming land, at the rate of 30,000 acres to each representative in Congress, and as the State of New York had 33 representatives in Congress, including the two in the Senate, it received 990,000 acres of land. For that, the government issued land script, each piece being good for so many acres. The State of New York, as you see, received virtually 1,000,000 acres.

Now there came a new phase of the
itable career. The two institutions, The People’s College at Watkins and the Agricultural College at Ovid, were going. Shortly afterwards, Mr. Cook who was known as the boss of that part of the country, and whose grandson is the present Mr. Barnes, had great influence in the State senate. The result was that he brought in a bill, embodying a charter for The People’s College, and giving it this colossal land grant in the state of New York. It passed without any particular notice, there being no struggle over it, as his influence was England-looking man. In build, though not in cast of his countenance, he was like a good many of the better portraits of our Uncle Sam, tall, thin, spare, limbs long, and with a certain severity in his look, which could change into a very pleasant expression of countenance. I did not get acquainted with him at that time. The leaders in the State held the main place on the floor. He was content, as I was, to listen. Our seats were near together. He was, with one exception, the oldest man in the Senate, and I was considerably the youngest very large, and this immense body of land was appropriated to that little People’s College.

Now we have got along to 1864. At that time, Mr. Cornell entered the State senate. I also became a member of that body at that time, and for the first time, we met. I had heard good things said about him by one of his friends, Mr. George Gettis, and had formed a high opinion of Mr. Cornell. I remember the first caucus of the Republican members of the Senate. It was a very trying time,—a time when a new levy of troops had to be put into the field by the state of New York, and when, after raising large sums of money, we were called upon to raise $8,000,000 more. That sum in those days and circumstances looked as formidable as $100,000,000 to-day. I remember that when we met in caucus, I looked around and saw Mr. Cornell for the first time, a tall, New man in the whole body. Circumstances did not seem favorable to our getting acquainted, and they did not seem favorable when we did become acquainted, for we were pitted tooth and nail one against the other. Mr. Cornell had noted the capture of the whole fund by The People’s College, and he therefore introduced a bill dividing the fund, withdrawing one-half of it from The People’s College, and appropriating it to the Agricultural College at Ovid. Having been made president of the Committee of Agriculture, he moved that the bill be referred to his Committee on Agriculture. I arose and opposed him with all my might, insisted that it was an educational matter, and ought to be referred to the Committee on Education, on which I had a place. It was hard to see which way it would go. Somebody moved that a joint committee be made of the two, and
that the whole matter be referred to a committee made up of the Committees of Agriculture and of Education. I was determined that the fund should be kept together some way, if I could manage it. Nearly all the 23 colleges in the state were starving, the best of them being Union College. I made up my mind that there was a possibility in the great fund, and that it should be kept together. Therefore I opposed any division of it. The result was that Mr. Cornell kept calling on me to get my committee to join his. But the joint committee never had a meeting. In the meantime, I labored to show him what the State really needed, that it needed a university that would embrace technical studies, studies in agriculture, scientific studies, that it should not be under sectarian control, and various other ideas. We both agreed on one subject, that women should be admitted. We were heart and soul together in this respect. We did not dare to put it in the charter at first, but the charter was arranged so that they could not be kept out. I kept at him and by and by something of a friendship grew up between us. His confidence in me was of slow growth, but he soon gave it to me to a considerable extent. He saw I was in earnest. I kept urging on him the importance of having the whole fund for the purpose of such an institution that was needed, and at last he gave me notice, at the close of the first session, in 1864, to come to a meeting of the State Agricultural Society at Rochester. There I would hear something that would perhaps please me, he said. He there addressed a meeting of the Trustees of the State Agricultural Society and he stated that he was convinced that for an institution such as ought to be established for agriculture, mechanical arts, scientific and classical studies,—for they were all embraced in the charter from the government at Washington,—it would require more money than half the land grant would amount to. Land script was selling for about 60 c. an acre. The Comptroller had sold about 100,000 acres and that gave him $60,000. Mr. Cornell addressed the body and said that he was satisfied that I was right, that $300,000, half of the land fund, would not be enough for such an institution that the great State of New York ought to have. In order to meet my scruples in the matter and to rise to the occasion, he then and there offered to give to the Agricultural College, providing the state would give it half the fund, the sum of $300,000. That would make it $600,000, which was likely to come to the fund afterward. There was great applause—all were carried away with it. It was supposed that the agreement would be made, when I simply declared that I would not agree to it. I saw new possibilities in this offer made by Mr. Cornell for a better institution than we had hoped for. It was perfectly clear that the institution at Watkins was not going to amount to anything. They had not complied with any conditions of their charter. The charter required them to have a certain number of professors but they had not appointed them. The charter required a library of a certain size but they had nothing but a collection of a few documents. All conditions had been disregarded and it was relying on its power to hold out. I then said if Mr. Cornell would give his $300,000, and ask for the whole grant, I would introduce such a bill and support it with all my might. . . They didn't know whether to laugh or cry over the matter. The possibility seemed great. When the next session began, I introduced the bill which met great opposition. All the colleges in the State except Columbia joined against it. It was claimed that we wanted to establish an atheist institution, which was godless, and that we did not propose to give any attention to classical studies. All over the State the opposition was very bitter. Lobby after lobby came down and presidents of various colleges began to work against the bill. One day, as Mr. Cornell and I were walking down the street together, at recess, he said: "There is something I would like to talk with you about. I have
a larger fortune than I need and than my family is going to need. I am able to give away half a million dollars. What in your opinion should I do?

"Well," I said, "Mr. Cornell, that is a pretty large question. But I will say this. The first thing in importance to the state is the charities. They will always be taken care of. The Legislature will always provide sufficiently for the great state charities, and you can rely upon the churches to look after the local charities. The next thing in importance is the education in the public schools. The first condition of a republic is to have the voters educated, so that they can at least read their ballots, and, if possible, understand speeches, and eventually read the newspapers. But in that which is the greatest in education, the higher education, the policy of this state has become one of non-interference. That has been done by various denominations so far. They do not have the means for, and do not realize the importance of higher education. There is where I would put $500,000. I would put it in advanced education."

He did not say a word more about it until I was getting the bill ready, when he said: "You may make the sum I am required to give $500,000, and a site for the institution." This was done. We had a tremendous struggle. Various corporations allied with the Cook interests, which were very powerful in the State. It was a great struggle. A little college in the western part of the State managed to tack on a clause obliging Mr. Cornell, if the university became established, to appropriate $25,000 to that college. They tried to make him promise this sum privately, but he said: "No, whatever I do, I shall do publicly." I heard him say this. When the bill was passed, Mr. Cornell accepted it, and he paid the $25,000 to the Genesee College.

Next year, a bill was spontaneously introduced and went through by consent of all parties. Everybody was ashamed that Mr. Cornell, for the privilege of giving away his money, should be required to pay $25,000. Eventually this was returned to Mr. Cornell. There were a great many things of interest in regard to that struggle, but in that way the university was established. It was a very serious struggle for this reason, that the chairman,—I won't name him,—was the head of a country school, had distinguished himself by making political speeches and had been sent to the Legislature. As he was head of a public school he was made chairman of the Committee on Education in the lower house. Nothing in the world could induce him to let that bill out of his committee. Pressure of local interests, sectarian interests, and various important newspapers were against us, and this chairman of the committee would not let the bill out. This obliged us to have a two-thirds vote. Mr. Cornell, in order to get the votes, voted the plan of calling together, at his rooms at Congress Hall, squads of men on both sides. Then, he would introduce me, with a short speech to them, and I would present to them the plan and needs of the future university in the State of New York, if they would do their duty. The result was that we made some converts. Tammany Hall was solid against us. We all went down. One of the curious things of the whole matter was to see the weaker brethren run for the lobbies when the bill came up. But we shamed a number of them into going back and got just the two-thirds majority required, and the University was begun.

Now, as to Mr. Cornell's connection with it and the agricultural side of it. He showed an intense interest in it. He was a very broad-minded man, and was bound that it should be not merely a State Agricultural college, or a State College of Mechanic Arts, or both together, but that all of those things mentioned in the charter from the general government and from the State of New York, should be embraced in it. We were required to have military instruction, but he
swallowed that with the rest. I think that he believed in it, as I do. The reason why it was adopted was, you must remember, that our charter was given in '62, in the dark times of the war, and the South had received agriculture and agricultural instruction. We had nothing to go by and nobody had a clear idea as to exactly what could be done. I was also commissioned to buy a great quantity of books. Very careful lists were made

great help from the military schools. So we were required to give a certain amount of military instruction to the students.

I went to Europe, remained there about 4 months, finding out about out. At the great Paris Exposition, which was then going on, a very large quantity of apparatus was bought. I think we were the first institution to have the Holtz electrical machine. Then I visited agricultural
colleges and colleges of mechanical and civil engineering and veterinary colleges. I visited the agricultural colleges in England, France, Germany and Italy. Curiously enough, in Italy, there was an agricultural college near the ruins of Pompeii. Everything I could find in the way of diagrams, (some of you may have noticed the papier mache models) I brought back with me. Mr. Cornell was pleased with the kernel of wheat, showing the whole structure of the grain of wheat. He was also greatly pleased with various other things of that kind. We kept up a constant correspondence. He put his hands in to his pockets deeply and got others to do the same. It was a large sum of money for those times: I spent over $60,000 in three months. The result was that we started with a collection such as no other institution in the country had.

I have spoken of Mr. Cornell's foresight. At times, it seemed to be almost miraculous. He was the only man in the United States who foresaw, I think, the possibility of locating the lands that were endowed in the land grant. These lands were selling at 60 cents per acre. Mr. Cornell helped the State of Illinois by holding back our land script, so that they got $1 per acre. He foresaw the possibility of locating the lands, and drew up a bill allowing him to locate the lands for the University, putting himself under heavy bonds to do this.

Mr. Cornell foresaw the future of the pine forests in this country. He determined to locate there. He employed an expert, put a great deal of work in it and realized what is now the bulk of his endowment of the University.

Mr. Cornell took more and more interest in the University, but he saw the necessity of bringing Ithaca into communication with the State. We were very unfortunate in that respect at the beginning. I called his attention to that and tried to have him locate the University at Syracuse, on the spot where Syracuse is now located. I had that idea in mind when I was a young man in college. He therefore began applying himself not only to the location of the land, but to building railways. He foresaw the growth of this railway system, especially the Lehigh Valley system. He foresaw it, and put his fortune into it. His friends all feared the result, and I ought to say to you, that it has been stated by many people, that Mr. Cornell was ruined by Cornell University. That is not true. The sum he gave was a magnificent sum at the time, amounting to about $750,000.

He brought his books, on one occasion, into a Trustee meeting, somebody having raised the question as to his means of doing things. He demonstrated that he still had a fortune of $3,000,000. This he put into the railways. His foresight was too good. Black Friday came on. He had not foreseen that a pack of scoundrels would start a panic which brought on Black Friday. All this brought on his death. When he died, the University and his private affairs were in a sad condition. But some of his friends put his affairs into shape and fixed the affairs of the University. But as to his great fortune, that, he had put into the railways. The reason he had embarked in that enterprise was because he wanted the University to be brought into connection with the rest of the state. Up to this time, there had been no communication with Ithaca, except by means of Owego and Cortland, 22 miles away.

Another example of his foresight in remote matters: I met him one day on the grounds. Some of the Trustees had asked me to warn him against the possibility of such a catastrophe as did occur. He said, "I am going to live for," I think he said, "20 years, and I shall be able to give the University a million dollars more. I may not live to see it but you will see over 5,000 students enrolled here." I didn't believe this would ever come to pass. He was then 67 years of age, and his father was somewhere in the 80's. In 6 months he was dead from overwork.
DR. ANDREW D. WHITE AT THE AGE OF 37

Then came this calamity from which we extricated ourselves, for the Trustees of the University came together, and tided us over. But I must say this about Mr. Cornell—he paid the bills of the University promptly, and all the salaries.

I might allude to a good many things which showed his interest in agriculture, but he watched with the greatest interest the whole subject. I remember, when I started for Europe, he had heard of James Law, a most promising veterinarian. As I was on the ferry myself starting for the steamer, he waved his hand at me and shouted: "Bring back that horse doctor."

Mr. Cornell used to go into the laboratories for he was greatly interested in the students. He made a mistake one day that caused much amusement. He went into the chemical laboratory and there found a very bright professor, who later became eminent: Mr. Cornell mistook him for a student. He slapped the professor on the back, and asked him what he was wasting his time at. The poor professor was very much shocked.

There was one difficulty at the beginning. The mechanical arts college was not difficult to start. The same thing was true of civil engineering, and of the classical and scientific courses. The lecturers we had here, Aggasiz, Lowell, George William Curtis, were famous. In those days, every student in the University was obliged to hear a course of lectures by Professor Gould on agriculture. Strange to say, they did not take it as a hardship for Gould was a born orator.

The great trouble in securing professors was with the Agricultural College. We secured various men for the headship of the other colleges, but a professor of agriculture we could not find. We got man after man, but none of them would do. At last one day, there came along a young Protestant Irishman, with a letter of introduction from a minister. He was a fine looking young fellow. He bore another letter showing that he was a graduate of the Irish Agricultural College near Dublin, and that he had passed a very creditable course. He came to inquire if there was any place for him in the Agricultural College. He wanted a professorship. I confess I was not in favor of him because he did not look to me like a man who
would be a practical man in the field, but Mr. Cornell said, "Let's take him. Perhaps he can tell us how they get those wonderful crops that I saw in England, and about the wonderful appliances that I saw there. He has been brought up under that system. Perhaps he is just the man who could tell us." The result was that he was nominated, and elected. He told Mr. Cornell that there were a number of things he could show him, but that he must have some new equipment. First of all, he wanted a new barn. A barn was built with great care, Mr. Cornell paying for it out of his own pocket. Then he must have all the farm implements they had in England. Mr. Cornell paid for a great collection of farm implements. In the meantime, Mr. MacDuff, as we usually called him, lived at Cascadilla, and enjoyed himself. He was a witty Irishman, and could talk considerably about English agriculture. Occasionally, he would go out on the farm where Benham, the farm manager was working. He had a way going around the place with his yellow gloves and dabbling in the soil with his malacca cane. In his life he had never seen Indian corn until he came here. Benham was a plain country farmer, a fine-hearted man. He had had great hopes in MacDuff and had tried to persuade Mr. Cornell that we were going to learn great things about English agriculture. But his faith seemed to grow less. One day Benham came to me and said; "Mr. White, you kin depend on 't, he ain't a-goin' to do nothin'; he don't know nothin' about corn, and he don't want to know nothin' about corn; and he don't believe in pumpkins! Depend on 't, as soon as his new barn is finished and all his new British tackle is brought together, he'll up and quit the job." I tried to calm Benham down. But he replied that as soon as things were ready, he would leave us.

MacDuff tendered his resignation when Commencement time came on. This was one of Mr. Cornell's slight mistakes, but it was a good experiment. When Mr. Roberts came, a change began; that was the turning of the tide. Then came the prodigious success of Mr. Bailey.

I ought to say in connection with this that Mr. Cornell's location of the land caused him to be persecuted throughout the state. Mr. Cornell was berated throughout the State in various pulpits and newspapers as a land grabber, and land thief. It had a different effect on some other men. Mr. Hiram Sibley lived in Rochester
and wrote him a letter when one of these attacks appeared. He said he was not a man to answer the attacks in the newspapers, but that, as a way to show his belief in Mr. Cornell, he was sending a check for $30,000. The attacks became severe. A member of the legislature in a public speech demonstrated that Mr. Cornell was a scoundrel who had got control of this land and intended to build up a fortune. This was published in many newspapers. I made a reply to it in the Chapel.

The result was that one morning when I was in my room feeling a good deal discouraged I heard some gravel rattle on my window. It was a beautiful morning, a little later, perhaps, than six o'clock. I looked out and saw Mr. Cornell. "Come out here, and listen to the bells! There is a place here where you can hear the bells with one ear and the echo with the other." I went out and told Mr. Cornell that it was all very well to listen to the bells, but there are the attacks, which are very hard for the University to bear. Here is another example of his foresight. "These attacks are the very best thing in the world for us," he said. "I have always feared these attacks would come. I rejoice to hear them uttered during my life and the University. I shall ask Governor Dix to appoint a joint committee of men, who are politically opposed to me." This was done. The head of the committee was Horatio Seymour, the greatest Democrat in New York at that time, a man of the very highest character. He was made president of the committee. The committee had full power to call for persons and papers. It sat in New York, and held regular sessions. They had all the witnesses they could find, and their report was the happiest for the University that ever was.

Mr. Cornell didn't live to see the great prosperity of the University. It must be remembered that all of his great fortune, in one way or another, except for some provision for his family, went to the University. He was devoted to agriculture, but could never confine his view to agriculture alone, or to mechanical arts alone, or to engineering alone. He wanted a University. George William Curtis, in speaking of the starting of the University at the inauguration of the President, 8th of October, 1865, told this story. He was in a gathering with Mr. Cornell. The speaker made a Latin quotation. Mr. Cornell turned to him and said: "What does that mean?" Mr. Curtis translated the Latin for him. "Well," said Mr. Cornell, "I hope that when the University is established, it will be able to turn out a lot of young men who can understand Latin quotations when they hear them." Then he bought the greatest classical library in the country.

I have shown the reasons why you can be proud of the man whose name the University bears, and whose name appears on your diplomas. I can only say that I count it as the greatest honor, the greatest pleasure and satisfaction of my life, call it providential, or chance, as you please, that I happened to be associated with him in the beginning and early work of this University. My only regret is he did not live to see the great prosperity to which it has at present attained.
PIONEER DAYS IN AGRICULTURE

By Isaac Phillips Roberts
Professor Emeritus of Cornell University

FORTY-ONE years ago I resigned my first professorship at the Iowa State Agricultural College and accepted a similar position at Cornell University; and on the first of February, 1874, I arrived with my family at Ithaca and set up housekeeping in

culum, we suffered a sort of social neglect and felt ourselves in an alien atmosphere.

Cornell University, as well as the new subject of "scientific agriculture," was then being attacked from every side because it was not admin-

A GROUP OF STUDENTS AND FACULTY IN FRONT OF THE OLD COLLEGE QUARTERS, NORTH END OF MORKILL HALL

Cascadilla—a dreary stone fortress which had been built for a Sanatarium and was then used as an Apartment House. We were plain people off the prairies and possibly because of that fact but more, perhaps, because agriculture was then regarded by most of the classically educated members of the Cornell Faculty as quite unworthy of a place in education beside the traditional subjects of the curri-

istered under religious auspices; and because the President had selected a corps of scientific lecturers who valued truth more than legend. One religious journal, I remember, called the University "a school where hayseeds and greasy mechanics were taught to hoe potatoes, pitch manure and be dry nurses to steam engines." Another dubbed it "a Godless, freshwater college planted in Ezra Cornell's potato
patch.' To me, coming from the more liberal atmosphere of the West, this violence of feeling was astounding.

In the Department of Agriculture there were then three senior students who had received their technical training under my predecessor, Professor McCandless. Two of them—John L. Stone and William R. Lazenby, now had a museum for a lecture-room and a mere half-dozen pupils.

Even more disheartening was the history of the Cornell Farm and the earlier attempts at agricultural education. The farm had first been placed in the hands of a gentleman whose delicate health required him to spend much of his time at a resort. In the

well known professors of Agriculture—and a few strays in search of a "snap," constituted my first class.

As the farm was leased and did not come under my control for some months, I had plenty of time in which to realize the difference between the conditions at Cornell and those I had left in Iowa.

From an ample farm house we came to live in three rooms in Cascadilla; instead of an 800 acre farm on which I had raised in one year, 5000 bushels of corn, I found a farm which had less than 100 acres of arable land; and instead of a herd of 100 cattle representing four different breeds, I found twelve miserable cows. I had been accustomed to setting at work every morning fifty to seventy-five students and now I directed three hired men; and to large classrooms and a body of enthusiastic students, where now I hope of obtaining better results, it had then been leased to a Cortland farmer who came to live in Cascadilla and who agreed to give the University one-third of its proceeds. The wretched condition of the farm, produced by irresponsible and absentee management, may be left to the imagination.

About 1872, President White had called to the Chair of Agriculture, Professor McCandless, a handsome Irishman from Glasnevin, who made it a condition of his acceptance that the University should build at once a large barn. Ezra Cornell, desiring to start the department properly, had provided the money for an expensive building, at the south end of the Campus on the site of the present horticultural barn. The second story of this barn was to be entered by a long causeway requiring a thousand
yards of dirt; and one-horse Irish dump-carts were to be imported which could easily be turned round inside of the barn! I found this barn incomplete and was obliged to finish it—all except the Causeway—but it never ceased to be a monstrosity and fortunately burned down about 1890.

Professor McCandless had already imported several hundred dollars worth of farm implements, queer, foreign machines, quite useless in the United States. All that were not dishonesty and there was nothing left of the ten thousand dollar appropriation with which I was supposed to begin. Vice-president Russell confessed that there was nothing he so much dreaded as to have a farmer drop in and ask to be shown over "the model farm." When I realized the prejudice to be overcome and the lack of sympathy and of resources, I determined that unless many things came to pass and those quickly, I would return to the West.

burned up with the Irish barn were ultimately placed in the Agricultural Museum among the other antiquities.

Although New York was my native state, I came back to it from Iowa where things were being done in a larger way; and although Cornell was founded upon the broadest lines, it was as yet undeveloped; thus, I set my expectations too high. The Farm, so far from being a model, was under the shadow of mismanagement and

The one inspiration I found in my department was Dr. James Law, a young Scotchman who had been brought over to be head of the Veterinary Department, a college which has now become one of the best in America. Since to complain would not help matters, I set to work to eradicate filth and disease from the dairy, to repair buildings and fences, and to clean up the farm generally. And quite to my surprise, things began
to happen which made the situation more tolerable. In 1874-5 both Professor Caldwell and myself were raised to full professorships, which showed that our work was being appreciated. From the beginning, President White took the greatest interest in the department and with this encouragement I gradually gave up my determination to go back to Iowa.

Cornell was then attempting to do a wholly new thing, the possibilities of which appealed to my imagination; and I cast in my lot with it that I might have a share in building the college of my dreams. With the help of my colleagues in the department I began to make a far-reaching plan which, though afterward altered and enlarged, was never lost sight of. But while we laid the foundations of a college such as had never been conceived, our days were filled with laborious details.

In April, 1874, I filed with the University Treasurer, the first inventory ever made by any of the departments; and that year I introduced the system of farm accounts which, I believe, is still substantially retained. I began at once to make the several divisions of the farm as creditable and remunerative as possible. For instance: there were twelve milch cows that had among them only twenty-two milkable teats, and some of them were infected with tuberculosis. With the aid of Dr. Law we cleaned those Augean stables; but just then, as fate would have it, a wealthy friend of one of the Trustees gave us some Jerseys—but they also were infected and once more we cleaned those stables. In fact, this happened again and it was many years before the menace was absolutely removed.

About 1877 or 1878 we bought a few Holsteins from the Boston herd owned by the Chenerys—the first to be brought into New York. In those days Shorthorns were “all the rage” because the Eighth Duchess of Geneva, a Shorthorn cow, had sold at New York Mills for $40,600 to be exported to England. My heresy in buying Holsteins nearly cost me my job and it was a long time before the prejudice against them died out.

There was also on the farm when I went there, a stallion of noted Arabian blood which was valued at fifteen thousand dollars. He had not been out of his stall for two years and although he was the sire of a few colts, they did not have legs enough to carry the curbs, ring-bones, spavins and deformities which he was capable of transmitting. When we finally got that Arab of the Desert out of his stall and rode him, he fell dead!

The earlier years are, in my memory, filled with interminable toil. Removing hundreds of loads of stone from the fields that are now devoted to athletics; manuring the worn-out lands; experimenting with crops and methods; creating an esprit de corps among teachers, students and hired men; and going about among the successful New York farmers to appraise their methods and learn their secrets. For it must be remembered that all my early adult years has been spent in the West and so I had to relearn farming under eastern conditions.

During all this period the farm was held to serve two purposes; it was to serve as a model but at the same time it was to be used as a practicable laboratory for investigation and instruction. Since the number of students was small, the farm had to be our chief reliance in building up the reputation of the Department. At that time the business men who constituted the Board of Trustees did not take much interest in it, so little indeed, that when they made an “appropriation” for the farm they always expected it to be paid back out of the income. It was far easier to convince the farmers that the department was capable of becoming a great factor in the uplift of their calling, than to convince the Trustees of its importance.

The establishment of the State Experiment Station at Geneva instead of at Ithaca was a great disappointment,
but afterward, when the Federal Station was placed at Cornell, it appeared that there was room enough for two in so great a State. We nevertheless went on with our researches and published the results in three good sized bulletins (1879-1885), the expense of printing being borne by that generous woman, Jennie McGraw Fiske.

Space does not permit me to go into the details of mistakes, nor of the successes which won the respect of the farmers and which finally won the support of the University authorities; nor of our struggle to raise the entrance requirements and the courses to the standards of the classical departments; for I was convinced that this was necessary to give agriculture its proper place in higher education. At the same time we were constantly harping on the principle that students could truly know things only by doing them, although for a long time we were obliged to graduate some students who had no acquaintance with farm practice. Even yet, I suppose, agricultural students seldom have enough practical knowledge of farming to assimilate the scientific information which they get in college. But, at the end as at the beginning of the pioneer days of agricultural science, I still believe that the way to learn one part of agriculture, perhaps the most important part, is to do farming.

THE LATER FINANCIAL AND PHYSICAL DEVELOPMENT OF THE COLLEGE OF AGRICULTURE

By Dr. L. H. Bailey

The College of Agriculture had come to the end, apparently, of its financial growth. The funds accruing from the Federal Experiment Station Act had been organized for experiment and research; the funds of the University were not growing. Persons with money to bestow for education had not learned the needs of agriculture. Students were increasing, new problems were rapidly arising, the people of the state were asking for help, the field of education by means of agriculture was expanding in men's minds.

Director Roberts had foresight of a great college of agriculture. He used to say that it would one day be the largest college in the University. Those were days of large faith. The college must do a peculiarly public work. The state must come to its support. The situation demanded it, and the original land-grant relation with the state implied it.

It was at this point that a change took place in the organization of the college. It was the privilege of the new administration to take up Director Roberts' plan of state cooperation. The members of the small and

THE FIRST DAIRY HOUSE

This stood between the present sites of Bailey Hall and the Home Economics Building. hard-working staff had been his students or associates; some of them had been both. He had already presented the question of State aid to the legislature. He had laid a good foundation in the careful and conscientious work of the college, and he had held
the work for agriculture. The rural people had the utmost confidence in him. His patient and wise direction in the beginning of things and in the small days—which are really the difficult and essential days—made possible the college of today.

When it was proposed that the legislature erect a building, the subject of agricultural education of college grade received widespread discussion in the state. The people became much interested. The result was the establishment in 1904 of the New York State College of Agriculture at Cornell University. It was probably the latest college of agriculture in the Union to be organized on a state basis.

The first appropriation was $250,000 for the erection of a building. That building is now appropriately called Roberts Hall. The act making the appropriation also established the college as a state institution. The act was Chapter 655 of the laws of 1904.

With the appropriation of funds for buildings, it was necessary to choose a site. The College was removed from the old campus, to the eastward of the Veterinary College which theretofore had marked the remote boundary. The new site was an open field, used for field crops and test-plats. It was still a part of the old farm of Ezra Cornell, but all farming work is now conducted on areas that lie beyond the boundaries of the founder's gift. The College had only the dairy building on the regular campus, and this is now the north wing of Goldwin Smith Hall; and its other work had been scattered in several buildings.

![Image of the first building of the college of agriculture]

The first building of the college of agriculture, known as the dairy building, now north wing of Goldwin Smith Hall.

State College of Agriculture at Cornell University. It was probably the latest college of agriculture in the Union to be organized on a state basis.

With the appropriation of funds for buildings, it was necessary to choose a site. The College was removed and one of the offices had been downtown.

Two years later the administration act was passed. It defined the purpose of the College, and laid out its plan in the three functions of college teaching, research, and extension teaching. This was an early expression in legal form of the field and scope of a college of Agriculture. And in this year, 1906, the first regular maintenance appropriation was made to the College. It was $100,000.

From this time the financial support
and physical equipment of the institution grew steadily. In the spring of 1907, the original building of the

State group (Roberts Hall) was dedicated, although a part of the building had been in use the preceding winter. With the enlargement of the scope, the problems began to increase. It was not the problem merely of increasing facilities and enlarging the space, but of building a new institution. The faculty began to increase and every department had to be separately organ-

ized to take its place with all the others in a new enterprise.

In 1907, the state made an appro-

priation of $50,000 for the completion of the equipment of the buildings, and $25,000 for barns. In this year, also the maintenance from the State reached $150,000.

The following year the regular maintenance remained the same; other appropriations were $30,000 for greenhouses, and $10,000 for extension work.
In 1909, the regular State maintenance reached $175,000; the $10,000 was again appropriated for extension work.

The growth of the College in students and in its investigation and extension work now raised difficult problems. The financial income and the equipment were not increasing fast enough to meet the necessities. The people were ready for a comprehensive plan. Under the leadership of H. J. Webber, Acting-Director, a plan embodying the needs of the College (with which was also included the Veterinary College) for a period of years was presented to the legislature. It was an admirable outline. The institution proceeded to develop on this basis.

The maintenance appropriation reached in round figures a half million dollars.

Under the guidance of Acting-Director Stocking, the development made substantial gains in 1914, the plans for a large plant industry building being authorized by the Legislature.

In the meantime, lands were purchased; the new farms were put into regular rotation plans as far as practicable; an orchard of many fruits was planted, and land secured for vegetable-gardening and floriculture. A farm for poultry was purchased. A large area was set aside for experiments, and the necessary small buildings and permanent equipments were secured or begun. Old farm buildings have been overhauled and repaired. Roads and bridges have been constructed. Fences have been put in repair. Wells have been sunk. Much of the land has been drained. Forest areas have been put under careful management. Trees have been planted, much grading has been done, and the grounds begin to assume their permanent character.

The equipment of farm tools, machinery and appliances has extended steadily. So have the herds and flocks, and the new lands have become closely populated.

This growth has been the result of hard work by all members of the staff. They have all been devoted to the enterprise. They have been pioneering. The College will continue to grow in financial support and equipment.
THE NEW YORK STATE COLLEGE OF AGRICULTURE IN ITS RELATION TO AGRICULTURAL PROGRESS IN THE UNITED STATES

By Dr. A. C. True
Chief of Experiment Stations, Washington, D. C.

Those who in the early days of agricultural developments in this country sought to bring science to the aid of the oldest and most important of the arts had little popular support or scholastic standing. They had to win both under rather discouraging circumstances. They, however, set high standards and clung to high ideals and in the end had the satisfaction of seeing these generally recognized as the only sure basis for agricultural progress.

The struggle to establish a worthy, useful, and permanent system of agricultural education and research in the United States has furnished striking evidence of the fact that an institution, enterprise, or movement which is not inspired by high ideals and does not in some way appeal to the imagination will fall far short of its greatest accomplishment, and further, that education which does not dignify and render attractive whatever subject it deals with will not attain its greatest usefulness.

The New York State College of Agriculture was among the first to make its influence felt in the new field of agricultural education and research and has maintained a position of leadership in the movement which has contributed much to agricultural progress in the Nation. It has been able to do this largely because it has stood for high ideals even when these were very difficult to maintain, has made the possibilities of agriculture and country life appeal to the popular imagination, and has trained men not only to teach and investigate but to inspire and uplift.

The institution has probably exerted its greatest influence upon the agricultural progress of the country through the trained men who have gone out from it and have become identified with agricultural work in all of its phases and in all parts of the country. These men are found as leaders in the activities of the U. S. Department of Agriculture and the State agricultural colleges and experiment stations and as successful managers of agricultural enterprises of various kinds. Their influence is therefore widespread and profound. In whatever activities they have been engaged they have as a rule brought to them, in addition to expert knowledge and skill, a certain breadth of vision, clearness of insight, and idealism which has dignified their work and made it more effective for practical good. Their work and influence have contributed to promote good citizenship as well as good farming and so enriched the common life of the country.

As agricultural education and research developed, advanced training in agriculture and the fundamental sciences on which it rests became an urgent need. Cornell University was among the first to realize this and has taken a prominent part in the organization of post-graduate work to supply this advanced training. It is also of interest to note in this connection that the university was one of the first institutions in the country to make definite provision for instruction and investigation in forestry.

The New York State College of Agriculture was a pioneer and has continued to be a leader in the great agricultural extension movement which has recently culminated in the passage of the Smith-Lever Act, which makes extension work national in scope and plan and seeks to coordinate and in-
crease the efficiency of all of the agencies and forces engaged in such work. The agricultural extension work of Cornell began to take definite shape in 1894, but was at that time limited in scope and local in application. Later, in 1897, it was broadened to provide for "the promotion of agricultural knowledge" in the State as a whole. It is interesting to note that this earlier work included most of the essential features of extension activities which later experience has proved to be most efficient, namely, local demonstration, itinerant lectures and schools, correspondence schools and reading courses, and popular bulletins.

A library of the best agricultural literature the world has ever seen has emanated from Cornell. The history of this phenomenal literary output goes back many years. It may be fairly said to have begun with the first, and for many years the only, textbook on agriculture in this country, which was written by Dr. G. C. Caldwell. The appearance of this book is of special significance historically because in its earlier stages of development agricultural research was almost exclusively based on chemistry, and chemists were as a rule the pioneers in such research in America as abroad. Suitable English texts for teaching this fundamental science as applied to agriculture were, however, not available. There is no doubt that this work did much to give form and force to agricultural instruction and research and thus contributed greatly to agricultural progress in the United States. One of the first American books of high authority and influence regarding animal diseases was the product of Dr. James Law of Cornell. These books, however, were but the forerunners of others either actually written by Cornell men or inspired from the source which has supplied America a permanent literature of agriculture of extraordinary completeness, reliability, and adaptation to the needs and conditions of the country. It is not possible to estimate the influence of this literature upon the progress of agriculture.

These are some of the larger forces set in motion at the New York State College of Agriculture which have had a nation-wide influence. Among the activities lying back of these larger forces which have tended to encourage and point the way to sound methods of education and research are included the early work in economic entomology by Comstock and his associates; the systematic horticultural studies, plant breeding, and forcing-house work of Bailey and his associates; investigations in dairying by Wing and others; demonstration of efficient means of spraying for insect pests and plant diseases; investigations on animal diseases; and investigations on the best methods of preservation and use of manure. Among important lines of work more recently strongly developed in this institution are soil investigations, poultry investigations, and farm management studies.

To sum up, the New York State College of Agriculture has been very influential in promoting agricultural progress in the United States by supplying highly trained men to serve as leaders and by setting at work influences and forces and spreading broadcast knowledge which tend to make farming more profitable and country life more attractive and more satisfying.
For the first 28 years of its existence, from 1868 to 1896, the New York State College of Agriculture, as we now call it, was an integral part of Cornell University, supported from its funds, administered by its trustees, and governed by its executive officers and faculty. It was described as a "college" in the University Register and, in common with other departments, or "colleges", was provided with a "special faculty", but the college had no real existence and its faculty was nothing more than a committee. In his report for the year 1886-87 President Adams recommended the use of the word college in connection with the agricultural department of the University because it had been necessary to organize no less than six departments within it to meet the requirements of instruction under the new federal laws. A distinct faculty, however, was not provided for until 1896.

Under the conditions of the Morrill Land Grant Act and the gift of Ezra Cornell, the University trustees were compelled to provide instruction in agriculture, mechanic arts, and military science at once. It was comparatively easy to find teachers in all branches of knowledge of the ordinary college curriculum, but in agriculture and mechanics the fields were so new that instructors were uncommon. The University administration did the best it could, and covered its disappointments with temporary expedients that were almost worthy of perpetuation. It must be remembered that agricultural education was then in its infancy, that it lacked organization, and that it had very little of the experimental knowledge now provided us, to work with. The oldest of our agricultural colleges, Michigan, was opened in 1857, only eleven years before instructional work was begun at Cornell. Less than half a dozen schools and colleges in this country were teaching the subject intelligently, and it was a rare thing to find a man devoted to teaching a subject so little in demand. It must be remembered, also, that the farmer of that day, with rare exceptions, had no faith in "book farming" and no wish to send his son to an agricultural school. Agricultural teachers were accordingly scarce, and President White was compelled to make use of men whose work in other fields touched upon the fundamental bases of agriculture. Botany was accordingly enlisted in the cause with horticulture and arboriculture added to its title, chemistry was made to serve through its new offspring "agricultural chemistry", geology was provided with a similar derivative, and even zoology was expected to give the student a good start in stock-breeding. The
The first two issues of the Register announced that the chair of practical and experimental agriculture would be filled by Joseph Harris, a well known agricultural editor of that day, but he never put in an appearance. Finally an assistant professor was found who was willing to teach agriculture on a worn-out farm with indifferent buildings and practically no equipment, and then the first "special faculty" of this new department was composed as follows:

The President, ex-officio, George C. Caldwell, S.B., Ph.D., dean, Agricultural Chemistry, John Stanton Gould, (non-resident), Mechanics applied to Agriculture, Charles Fred. Hartt, M.S., General Economic and Agricultural Geology, James Law, F.R.V.C., Veterinary Medicine and Surgery, Albert N. Prentiss, M.S., Botany, Horticulture, and Arboriculture, Lewis Spaulding, S.B., Agriculture and Director of the Farm, Burt G. Wilder, B.S., M.D., Comparative Anatomy and Zoology.

Of these much might be said, for, with but one exception, they were prominent and influential members of the University faculty and rendered invaluable services in its development. Professor Caldwell served the University and its department of agriculture for 35 years and was one of its most useful and highly esteemed instructors. He retired from active service in 1902 and died four years later.

John Stanton Gould was one of the strong men of New York, who helped to promote the welfare of the University in its early years. He was a practical farmer, a man of sound learning and varied experience, and a lecturer of rare merit. He was one of the University's non-resident professors, and the first one of that class to lecture on an agricultural subject. Professor Hartt was abroad much of the time during those years and died in Brazil in 1878. Professor Law, a graduate of some of the best veterinary schools of Scotland, England and France, was perhaps one of the best equipped teachers of veterinary science of his day. He entered upon his duties here in 1868, without a clinical theatre for his classes and with a discouragingly meagre equipment, and continued at his post until 1908, when he retired with 40 years of service to his credit. He was a member of the agricultural faculty until 1896, when

he became director of the new State Veterinary College. Professor Prentiss was another one of those quiet, stu-
dious teachers who did much for the educational welfare of the University without having it announced from the housetops. Although the greater part of his time was given to instruction in general botany, he found time to create a sub-department of cryptogamic botany which, under the direction of one of his most gifted graduates, William Russell Dudley, began investigating plant diseases at a very early day. The extent to which this important work had been carried is shown in Professor Dudley's report for 1890. Professor Prentiss retired in 1895 because of illness and died the succeeding year. Professor Wilder was eminent in his department, and undoubtedly found some means to make his instruction apply to animal husbandry. He was a man of varied gifts and was excelled by very few as
a scientist and teacher. In one noteworthy particular, he rendered a most important service to the future College of Agriculture. In 1872 he assisted one of his favorite pupils, John Henry Comstock, to initiate instruction in entomology, which was the beginning of what is now one of the greatest entomological schools in this country. Professor Wilder retired from active work in the University in 1910. Professor Spaulding, whose task was perhaps the most difficult of all, because he had to organize work in a new field and in doing so was expected to satisfy the legitimate expectations of every one concerned in the creation of the University, retired at the end of his first year.

There was an empty chair of agriculture the following year, and the Trustees met the emergency by engaging a number of non-resident lecturers to discuss various agricultural subjects. Among these, Dr. F. M. Hexamer delivered three lectures on the "Potato;" J. J. Gregory three,
was elected assistant professor of agriculture in 1872-73, and remained at the head of that department as professor, director and dean for a period of 30 years, retiring from active work in 1903. Under his supervision the farm was made productive, the courses of instruction were systematized and extended, and new departments were organized.

The following year (1874-75) found three Cornell graduates at work as instructors, W. R. Dudley in cryptogamic botany, J. H. Comstock in economic entomology, and W. R. Lazenby in horticulture. The first two were made assistant professors in 1876 and the last in 1879. William S. Barnard was added to the entomological staff in 1879, Professor Comstock having accepted a government appointment, and in 1881 Professor Lazenby resigned to accept a better position in the Ohio State University. Professor Dudley continued at Cornell until 1892, when he resigned to accept the chair of botany in Leland Stanford University. The vacancy in the geological department occasioned by the death of Professor Hartt was filled in 1879 by the appointment of Samuel Gardner Williams who became a member of the agricultural faculty.

In 1879 the University established an experiment station in connection with its agricultural department and some minor appointments resulted, owing to increased work. In 1888 this station was merged in the federal station located at Cornell under the Hatch Act, and from this time the growth of the department has been phenomenal, especially since it became a state institution in 1904.

In 1888 Liberty Hyde Bailey was added to the agricultural staff as professor of "general and experimental horticulture." This was the first of the "dividing up" measures that has been so characteristic a feature in Director Bailey's administration. Professor Prentiss's old chair of "botany, horticulture and abori-
fessor W. A. Stocking, Jr., who had joined the staff in 1906. Professor J. E. Rice was an assistant in 1890 and began instruction in poultry culture in 1891. Professor M. V. Slingerland began a long and most useful career in 1893 as an assistant in entomology, which ended with his death in 1909. Professor G. W. Cavanaugh was made an assistant in chemistry in 1891 and is now chief of the department of agricultural chemistry. A. D. McGillivray and K. M. Wiegand were made assistants in 1894, B. M. Duggar in 1896, J. L. Stone and G. N. Lauman in 1897, W. A. Riley in 1898, J. A. Bizzell and H. H. Whetzel in 1903, C. S. Wilson and D. Reddick in 1905, H. E. Ross in 1906, E. S. Savage, L. Knudson, L. J. Cross, H. H. Love and A. W. Gilbert in 1908. In 1903 T. F. Hunt was appointed professor of agronomy and resigned in 1906 to accept a better position elsewhere. In 1903 also Professor John Craig was chosen to succeed Director Bailey in the department of horticulture and held that position until his death in 1912. G. F. Warren joined the staff in 1906 as assistant professor of agronomy and is now at the head of the new department of farm management. In 1905, E. O. Fippin joined the staff as an assistant professor, and M. W. Harper, W. C. Baker and C. H. Tuck as assistants.

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**Chart Showing the Increase in Numbers of the Faculty**

The figures include professors, assistant professors and instructors.

In the following year T. L. Lyon began his work in soil investigation, and M. W. Wilson initiated instruction in meteorology. H. J. Webber took charge of plant breeding work in 1907, and H. W. Riley and Miss Flora Rose began work in farm engineering and home economics the same year. The names of A. R. Mann, M. F. Barrus and E. S. Guthrie were added in 1908.

In addition to these, special mention should be made of the services of Mrs. A. B. Comstock whose work in nature study dates from 1903, of Miss A. G. McCloskey whose work in nature study and rural education dates from 1899, and of Miss Martha Van Rensselaer who was supervisor of reading courses in 1903 and professor of home economics since 1910. Mention should also be made of the invaluable services of John W. Spencer in the cause of rural education, and of Charles E. Hunn, horticulturist and head gardener of the experiment station and college.

THE DEVELOPMENT OF THE EXPERIMENT STATION

By John H. Comstock, '74
Professor of Entomology, Cornell University

WHEN one speaks of the "Experiment Station" reference is usually made to the existing division of the College of Agriculture that is supported by the Federal Government, under the provisions of that law commonly known as the Hatch Act of 1887. But to discuss in an adequate manner the development of this division of our College one must give account of events that occurred long before the passage of that Act. It is necessary to go back nearly to the beginning of the existence of Experiment Stations in this country.

The first Experiment Station in the United States was established at Middletown, Connecticut, in 1875. Four years later, in February, 1879, "The Cornell University Experiment Station," of which the existing Experiment Station is a direct descendent, was established.

The movement to establish this Station originated in the Faculty of Agriculture; the members of which were familiar with the important results obtained by Lowes and Gilbert at Rothamsted, England, and by the Experiment Stations in Germany, and were anxious to take part in promoting similar work in this country.

It was felt at the outset that the efficiency of such a station here would be greatly augmented by enlisting the sympathy and cooperation of the leading agriculturists of the State. To this end the Board of Control of the Station included the Faculty of Agriculture, a very small body in those days, and delegates—one each—from the State Agricultural Society, State Grange, State Dairymen's Associations, Western New York Farmers' Club, Elmira Farmers' Club, American Institute Farmers' Club and the Ithaca Farmers' Club.

At the first annual meeting of the Board of Control, held at Cornell University, June 20, 1879, the following officers were elected:

President—Professor I. P. Roberts.
Director—Professor G. C. Caldwell.
Treasurer—Prof. A. N. Prentiss.
Secretary—Prof. W. R. Lazenby.

In May, 1880, the First Annual Report of this Station was published. This is a volume of 133 pages, and contains contributions from each of the officers named above and from Professor L. B. Arnold, Dr. S. M. Babcock, Professor W. S. Barnard, Miss J. Chevalier, and Professor James Law.

All of this work was volunteer work. The only funds at the dis-
posal of the Station during the first year was the sum of two hundred and fifty dollars given by Miss Jennie McGraw for the printing of the annual report.

The second report of this station appeared in 1883. This is a volume of 162 pages. During the period covered by this report a salaried chemist was employed; the Trustees of the University having appropriated for the use of the Station $1,000 for the year 1881-2 and $1,145 for the year 1882-3.

The hoped-for cooperation of the various agricultural societies in the management of the Station was not realized; and it is stated in the Preface to this second report that: "The Board of Control of the Station at present consists essentially of the Agricultural Faculty of the University, with Professor I. P. Roberts, as President of the Board, and Professor G. C. Caldwell as Director."

The third, and last, report of the Cornell University Experiment Station was published in 1885 and consisted chiefly of papers by Professor Roberts and Dr. Caldwell. The University continued its aid to the Station by appropriating the sum of $750 for the services of a chemist in 1883-4.

The demand for the reports of this Station was so great that they were soon out of print; and consequently the University published in the winter of 1886-7 a volume of selected papers from them, under the title of "Studies in Practical Agriculture."

This concluded the activities of our first Experiment Station as such; for in the following spring, March 2, 1887, the Hatch Act was passed. This gave the little corps of workers, who had been giving voluntarily to the work of the Station what time they could spare from their teaching work, and this without financial assistance, except for the services of a chemist, assurance that the work could be carried on in a manner more adequate to the needs of the occasion. Funds were to be available for the enlarging of the staff and for the maintenance of the work.

A very important result of the existence of our first Experiment Station was the fact that at the passage of the Hatch Act there was already in existence here an organization fitted, by several years of experience, to take up the work of a Federal Experiment Station without delay, and with very definite ideas as to the nature of the work to be done.

The work of reorganization proceeded as follows: On July 19, 1887, the Executive Committee of the Board of Trustees requested the President of the University and the Faculty of Agriculture to prepare plans for the organization of an Agricultural Experiment Station, in fulfillment of the requirements of the Hatch Bill, and report at the October meeting of the Board.

In response to this request the committee, consisting of President Adams and Professors Roberts, Caldwell, Prentiss, Comstock, and Williams, made an extended report in which was narrated the functions of an Agricultural College and a discussion of the best way to carry out the purposes of the Hatch Act.

In reviewing the equipment of men and means for carrying on the work
of the Station the committee reported that in all departments of instruction in Agriculture, with a single exception, the University was well equipped. The one exception was the department of Horticulture, which at that time was merely a division of the department of Botany. For this reason the committee recommended the appointment of a Professor of Practical and Experimental Horticulture.

The committee also made a recommendation as to the constitution of an Agricultural Experiment Station Council, suggesting that the Council "consist of the President of the University; two other members of the Board of Trustees, one of whom shall be the President of the State Agricultural Society, and one of whom shall be chosen from the Trustees residing in Ithaca; together with the heads of those departments in which the work of the Station is to be done, viz., the Professor of Agriculture, the Professor of Agricultural Chemistry, the Professor of Veterinary Science, the Professor of Botany, the Professor of Entomology, and in case the appointments recommended are made, the Director of the Station, and the Professor of Practical and Experimental Horticulture." The report of this committee was adopted by the Board of Trustees October 26, 1887.

The first meeting of the newly established Council was held on November 24, 1887. The members of the Council from the Board of Trustees were Mr. W. A. Wadsworth, President of the State Agricultural Society and President A. D. White. The other members of the Council were President Adams, and Professors Roberts, Caldwell, Prentiss, and Comstock. At this meeting, the Council made recommendations as to the distribution of the fund of $15,000 that was to be available, in which were included recommendations for the ap-
pointment of a Director, a Professor of Horticulture, and nine assistants distributed among the different departments.

The report of the Council was adopted December 16, 1887; but the completion of the organization of the Station did not take place till April 30, 1888, when the Trustees appointed the officers of the Station; and thus was launched the existing Experiment Station.

J. H. Comstock, '74

At this time there remained only two months of the fiscal year during which the first annual appropriation was available. The writer remembers very vividly the activity of those two months. Each department carefully selected and secured necessary equipment; and the Insectary, the first building of its kind, and for which the name Insectary was coined, was planned and built during this period.

About this time, April 14, 1888, Professor L. H. Bailey was appointed Professor of Horticulture and he took charge of the newly established department of Horticulture at the beginning of the next academic year. This position he held till the retirement of Professor Roberts in 1903, when he was made Director of the College of Agriculture.

During Professor Roberts' administration as Director of the Station a large amount of very important work was accomplished by the Station; many bulletins were published, and the extension teaching, by which the results of experiments were carried directly to the people of the State, was inaugurated.

Almost immediately after Professor Bailey became Director of the College of Agriculture, the facilities for carrying on the work of the Experiment Station were greatly improved. In the first year of his administration the University acquired the Mitchell farm, and thus was made possible the setting aside of the forty-five acres, known as the Caldwell Field, for experiments. A year later, in 1904, the New York State College of Agriculture was established, which resulted in greatly increased opportunities for research. And in 1906 the "Adams Fund" for the support of research became available.

During recent years additions have been made to the experimenting staff, which now numbers thirty-nine: nearly all of whom are of professional rank.
THE DEVELOPMENT OF THE COURSES OF INSTRUCTION

By George N. Lauman, '97
Professor of Rural Economy, Cornell University

The courses of instruction of any institution of learning are the product of the theories of education, the number and quality of the staff and the material resources available. In the early years of Cornell the theory of what a course in agriculture should be dominated the curriculum. Such phrases as "the close union of liberal and practical education;" the "equality between different courses of study;" "making much of scientific study," indicate the trend of the instruction and requirements for a degree which made Cornell a much talked of institution in the earlier years of its existence. More specifically Mr. Cornell at the inaugural exercises, October 7, 1868, said, "I trust that we have made the beginning of an institution which shall bring science more directly to the aid of agriculture and other branches of productive labor. Chemistry has the same great stores of wealth in reserve for agriculture that it has lavished so profusely upon the arts.

We must instruct the young farmer how to avail himself of this hidden treasure." That an institution holding such ideals had much to contend with may be seen from these extracts of an address of ex-President White before the New York State Agricultural Society. "This error is, that your endowed institutions for education applied to industry, are intended to give primary instruction in

![Chart showing the increase in numbers of the students](chart.png)
the rudiments of Agriculture and the Mechanic Arts;" again "and on that they should build, making them master farmers; thoroughly based in science bearing on Agriculture; thoroughly trained in the arts bearing on Agriculture;" and finally "send forth every year a brood of apostles of improved Agriculture—apostles who shall be better scientifically, practically, economically."

What was the course outlined for students who wished a thorough foundation to follow agriculture? The first "Cornell University Register 1868-9" presents the following:

THE FULL COURSE OF TWELVE TRIMESTERS OR FOUR YEARS.

First Year.—Fall Trimester.—Algebra; English language and vocal culture; French; Human and comparative physiology.
Winter Trimester.—English language and vocal culture; French; German; History; Zoology.
Spring Trimester.—Botany; Embryology; English language and vocal culture; French; Trigonometry.

Second Year.—Fall Trimester.—Chemistry; English literature and elocution; Experimental mechanics; German; Psychology; Vegetable physiology.
Winter Trimester.—Chemistry; Elementary Geology; English literature and elocution; German; Philosophical anatomy; Physics.
Spring Trimester.—Acoustics and optics; Chemistry; Book-keeping (or laboratory practice); German; Physics.

Third Year.—Fall Trimester.—Agricultural and economic botany; Agricultural chemistry; English literature and rhetoric; Veterinary anatomy and physiology.
Winter Trimester.—Agricultural chemistry; Agricultural and economic botany; English literature and rhetoric; Horticulture; Veterinary medicine and surgery.
Spring Trimester.—Agricultural chemistry; Arboriculture; English literature and rhetoric; Landscape gardening; Veterinary medicine and surgery.

Fourth Year.—Fall Trimester.—Agricultural architecture; Agricultural geology; Astronomy (or comparative anatomy and history); Practical agriculture; Rhetoric and oratory.
Winter Trimester.—Agricultural architecture; Agricultural technology; Practical agriculture; Moral philosophy and political economy; Rhetoric and oratory.
A cursory glance at this course shows that the College of Agriculture proposed to ground its students during the first two years in the liberal arts and the fundamental sciences necessary to a well rounded development and a foundation for technical studies. The latter follow in the third and fourth years without completely occupying all the time required of the student.

This ideal course of study has lived in part through the various vicissitudes brought about by the increasing number of men on the staff and the enlargement of the material resources in late years. The future historian of the subject will have much interesting material to study in following the various vicissitudes, and in noting the inevitable compromises which have been brought about in more than forty years.

The chief characteristic of the curriculum of today is that the courses are so numerous that no student can expect to encompass the fundamental work of every department represented in the College. It is a question whether the College makes it possible for the student to attain today the ideal previously set forth. With the splitting up of subjects has come extreme specialization and naturally this has been more pronounced in the purely technical subjects. In the materialistic modern age of the College, speaking with reference to curriculum, it is noteworthy that it is now more difficult to turn out a country gentleman in the true sense of the expression than in the days of the founders.
under the present organization would be doing all, or the major part of their work in the College of Agriculture. The detailed statistics regarding registrations in Agriculture appear elsewhere in this number and need not be duplicated here.

In connection with the sudden growth of the graduate work in Agriculture beginning in 1888, it is significant to read in President Adams' report for that year that Mr. Liberty H. Bailey had been appointed Professor of General and Experimental Horticulture and that his course during the Winter Term "attracted much attention by its excellent characteristics, and by the interest and even enthusiasm which it awakened on the part of the students". No other one man has been more largely responsible for the development of graduate work in Agriculture in our University and in other institutions in this country.

In going over the available data relative to the Graduate Work of the University, one is impressed by the fact that present standards of requirements have been gradually evolved, and that the College of Agriculture of Cornell University owes its present leadership in its field to its recognition of those standards and to an earnest effort to apply them.

THE DEVELOPMENT OF THE LAND AND THE COLLEGE FARMS

By John L. Stone, '74
Professor of Farm Crops, Cornell University

As a part of his original endowment of Cornell University Ezra Cornell included a farm of 207 acres. This area is what now constitutes the principal part of the present Campus from West Avenue to the Judd Falls road just east of the new Animal Husbandry buildings. In 1873 the University purchased of Mr. Cornell the tract lying along Cascadilla Creek, 50 acres in area, and a little later purchased of the heirs of Mr. Cornell the tract between University Avenue and Fall Creek, 33 acres. Several other later purchases of adjacent lands have finally brought the area now recognized as the University Campus up to 351 acres.

Agriculture had a place in the teaching at Cornell from the first, and as the few buildings occupied but small area nearly the whole of the tract lying east of East Avenue was available for farming.

The old barns of the Cornell farm were located on the northern portion of the site now occupied by Lincoln Hall and the orchard occupied the site and front of Sibley College. In 1879 the old barn was succeeded by another located on the present site of the Home Economics building, which remained the center of the farming operations for thirty-two years, until its removal in 1911.

During the first five years of the University it is probable little use was made of the land for teaching or demonstration and certainly not for experiment, for the day of agricultural experiment had scarcely dawned in this country. At any rate, the writer, who was a student in the University part of those years, has no remembrance of such use. In the autumn of 1873, Professor I. P. Roberts (later Dean-Director) was called from Iowa to take charge of the University farm and to teach applied agriculture to the few students interested in that line of study. Immediately the land began to play a part in the teaching. The area now occupied by the College of Agriculture buildings and the Student Commons is the land upon which he farmed during the thirty years of his connection with the University. And so well did he farm it that in 1897
Ex-Director Bailey, in writing the introduction to Roberts' "Fertility of the Land," said of it, "It is the ripened judgment of the wisest farmer whom I have known."

The pressure for land for agricultural purposes was great during the later years of Director Roberts' period of service—so great that neighboring farms were worked on shares many seasons.

It was not until 1903, however, when the greater portion of the available land in the old farm was set apart for Student Commons, that additional land was purchased. Then were secured in quick succession the Preswick farm of 67 acres (cultivated fields 6, 7, and 8, and pasture A on accompanying map); the Mitchell farm of 110 acres (Caldwell field and pastures B and C); and the Behrend tract, 44 1/2 acres, (Forestry experiment land.)

These acquisitions permitted considerable increase in the farming operations, but numerous new departments were being created in what had now become the State College of Agriculture and the call for land for experiment, demonstration, and teaching work was very great. This resulted in another series of purchases. In the early part of 1908 there were secured the Blair farm of 111 acres (the Farm Crops plats, Pomology plats, and fields 3 and 4); the Smith-Guinip farm of 93 acres (fields 9, 10, 11, 12, and pasture D); and the Frank Cornell tract of 60 acres (field 1, 17 acres, was added to the farm, and field 15 and Arboretum, 43 acres, were added to the Campus.)

Later in 1908 there was secured the "Southeast" farm (fields 51 to 59): the Ryan tract of 33 3/4 acres; the Ostrander tract of 55 1/2 acres; and the Casey tract of 20 1/2 acres, making a total of 129 3/4 acres. About 30 acres of this purchase, located on the south side of the Ellis Hollow road, were added to the Veterinary College farm (secured about the same time), bringing the area of the same up to 145 acres and leaving 100 acres to be added to the College farm. The 5
The Cornell Countryman

acre site occupied by the State barns was secured from the Misses Mead, and the Comstock Knoll of 3½ acres (Forestry nursery) from Professor Comstock.

These were secured chiefly for use as pasture. There was also secured from the Peter Kline estate 22 acres on the north shore of Beebe Lake, but this was not secured for farming purposes. The last mentioned three tracts are not shown upon the map. The College also rents and uses the McGowan farms of about 121 acres (fields 20 to 25 and pasture E) and the Meade farm of 30 acres (fields 16 and 17.)

The College, then, has under its control, including the rented areas, 956 acres. Of this area about 320 acres are devoted to the growing of general farm crops; 180 acres are used by the numerous College departments for experiments, demonstrations, and teaching work; 100 acres of woodland is under the management

**University Farm**

*University farm. Dotted lines indicate drainage systems*

In 1910 the Hasbrouck farm of 52 acres came to the University by bequest and 50 acres of the same is leased to the College of Agriculture for the Poultry farm. In 1912 this tract was enlarged by securing at the northward 30 additional acres from Mr. McDaniels. In the same year the Bool farm of 50 acres was secured, the east portion being devoted to Floriculture and the west portion to Vegetable Gardening.

Early in 1914, a 30-acre hill pasture field was secured from the Cascadilla School trustees and in June the Cascadilla farm of 113 acres was added.
of the Department of Forestry; and
the balance is in building sites,
pasture, and rough waste land. Some
of the land was in very neglected con-
dition when secured. Part was badly
encumbered with hedgerows in which
thousands of loads of stone had ac-
cumulated, and very much of it
needed draining to make it satis-
factory.

The dotted lines on the map indi-
cate tile drains that have been laid.
Many hedgerows have been removed,
and the land has been dressed with
much manure drawn from the city
and with more produced on the farm.
The land is responding to this
generous treatment. The following
are the crop areas and yields of the
past year.

<table>
<thead>
<tr>
<th>Crops</th>
<th>Area</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay (including 65 tons Alfalfa)</td>
<td>120 A.</td>
<td>400 tons</td>
</tr>
<tr>
<td>Silage</td>
<td>50 A.</td>
<td>522.5 tons</td>
</tr>
<tr>
<td>Roots (estimates)</td>
<td>2½</td>
<td>45 tons</td>
</tr>
<tr>
<td>Wheat</td>
<td>44</td>
<td>1500 bu.</td>
</tr>
<tr>
<td>Oats</td>
<td>38</td>
<td>1485 bu.</td>
</tr>
<tr>
<td>Rye</td>
<td>4</td>
<td>85 bu.</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>34</td>
<td>586 bu.</td>
</tr>
<tr>
<td>Potatoes (estimated)</td>
<td>8</td>
<td>2000 bu.</td>
</tr>
</tbody>
</table>

The old barns on the Mitchell farm
and on the Blair farm have been re-
paired and put in very serviceable
condition. Two new barns have
been built by the state—a general
cattle barn that can accommodate
over 100 cows or equivalent young
stock in 1909 and a horse barn to hold
about 80 horses and colts in 1912.
Provision has also been made for a
sheep barn, a pig barn and a tool
barn, which have not yet been erected.

THE EXTENSION WORK AT THE COLLEGE

By Charles H. Tuck, '06
Professor of Extension Teaching, Cornell University

President Benjamin Ide Wheeler of the University of
California has said that there is
nothing new in the idea of extension
work, that for more than a half cen-
tury universities and colleges have felt
in some way the request of the people
for assistance. This assistance in a
more or less organized form has been
given by universities, colleges and
other educational organizations in this
country and Europe for many years.

But not until last winter was there
any uniform national legislation in the
United States. Such was secured
through the passage of the Smith-
Lever bill which brings federal aid for
agricultural extension to the States
through the Colleges. It therefore is
worth while now to look back over the
growth of extension work in New
York.

From the early days of the Depart-
ment of Agriculture at Cornell Uni-
versity, there was a readiness on the
part of the College to assist farmers at
their farms and at the College. No
true professor of agriculture in those
days could well resist the demand.
But no definite steps were taken toward
organization until 1894 when Mr.
Frederick Nixon of Westfield, N. Y.,
then chairman of the Ways and Means
Committee of the Assembly, obtained
an appropriation from the State which
enabled the College to conduct exten-
sion work and to promote the horti-
cultural interests in the western coun-
ties of the State. This was the first
extension work, as such, undertaken
by the College.

Mr. John Spencer of Westfield, N.
Y., who was the leader of the Chau-
tauqua Horticultural Society, was
largely responsible for the initiative in
this movement. He gave hearty sup-
port to the work and to the horticult-
ural schools conducted by Professor
Bailey, Mr. E. G. Lodeman, and
others of the staff of the College.

This horticultural school conducted
by Professor Bailey marked a new
epoch in extension teaching and was
the direct forerunner of the extension
school of today. This embodied the
ideas of consecutive teaching and
The Cornell Countryman

demonstration which are today so important in extension work.

In 1896, Mr. Spencer became identified with this extension enterprise at the College; he had lived in rural communities and knew their needs. He it was who first saw the need to help the teacher through printed leaflets, and later developed the plan of organizing the children of the State into Junior Naturalists Clubs. This latter phase of the movement developed into large proportions, and Mr. Spencer soon became known as the beloved "Uncle John" among the great numbers of children with whom he carried on correspondence. Some years as many as 30,000 children corresponded with Cornell University through Mr. Spencer's office.

Not only did Mr. Spencer start the work with the children, but also with adults through the Reading-Course for the Farm to which later was added the Reading-Course for the Farm Home under the direction of Miss Martha Van Rensselaer. These reading courses, continued to this day, present agricultural and home economics subjects in a popular way each month and serve to stimulate reading and questions through the question papers that accompany each lesson.

Out of the movement developed the Junior Naturalist leaflets, edited by Miss Alice G. McCloskey, who is now the editor of the Rural School Leaflet. In 1899, Mrs. Mary Rogers Miller, who had done efficient teaching when representing Cornell in the State Teachers' Institutes, started the Home Nature Study Course Leaflets for the purpose of helping teachers through correspondence. In 1903, this work fell to the hands of Mrs. Anna B. Comstock, who continued it for a number of years.

The extension movement started by Mr. Nixon through the Legislature, and carried on so successfully by Professor Bailey, Mr. Spencer and others, was the real beginning of the extension work of the College. As the work developed a need was felt for extension activities along other lines. Farmers and farm women began to ask for information on the problems of the farm and home. To meet the increasing demands, larger appropriations and more experts were necessary and as these conditions have been met, the whole movement of extension teaching has developed.

In Director Roberts' report to the President of the University in 1906, mention was made of the necessity for more experts to do extension work in response to the increasing demands for instruction on agriculture from residents of the State. There was an awakening and earnest desire for instruction in rural affairs. In his report that same year Professor Bailey, then Head of the Department of Horticulture, recommended that extension work be done by other departments as well as by the Department of Horticulture.

In 1897, $25,000 was appropriated by the State to enable the College to carry on instruction by means of schools, lectures, cooperative experi-
ments, farm advisors, reading-courses, and other University Extension methods in agriculture. This law gave a great stimulus to the extension activities of the College. In 1901, this appropriation was increased to $35,000 and was raised to $70,000 in 1913 but decreased to $57,200 in 1914.

In the last ten years the whole field of agricultural education has been broadened and enlarged. The demands for instruction in agriculture have increased in number quite the same as have the applications for entrance to our state agricultural colleges.

It has become advisable to place special instructors for extension teaching in nearly all departments of the College. These persons have the usual academic titles with “extension” attached to denote relationship, as, extension professor in pomology.

Extension schools of one week in duration, the direct descendants of the horticultural schools of Professor Bailey, have been revived and extended so that today they are one of the strongest branches of extension service.

The Farmers’ Institutes, with which every one in the country is familiar, have grown to a place where now these popular meetings are held in every rural county in the State. These meetings, under the direction of Mr. Edward van Alstyne of Albany, provide a medium for entertainment, social intercourse and instruction.

The latest development is the farm bureau with its county agent. The details of this organization are set forth elsewhere. The purpose is to make available for a county a trained person who will promote the best interests of the agriculture of the county through resident operation, under the direction of Professor M. C. Burritt of Ithaca. These agents are growing in number and are inciting a strong influence on the trend of rural affairs in the counties concerned.

To recount briefly the development of extension work is easy and pleasant, to contemplate the increase of funds and facilities for the future is gratifying, but to make effective the extension teaching of the future requires patience, study and a conservatism which is best exemplified in the farmer himself. To avoid exploitation of children in spectacular crop and animal contests, to eliminate selfish publicity of commercial organizations, to courageously bar out politicians who would fatten on extension opportunities, to suppress the agricultural teacher of the “promoter type,” and to train ourselves to see clearly and act effectively, constitute the problem of extension teaching in agriculture.

C. Y. Lacy, ’73
A member of the first graduating class of the College of Agriculture
HOME ECONOMICS IN THE COLLEGE OF AGRICULTURE

By Martha VanRensselaer
Professor of Home Economics, Cornell University

HOME Economics in the New York State College of Agriculture began with extension through a series of pamphlets sent to farmers' wives of the State. There had been previously a Reading Course for the Farm and it was the desire of Dr. Liberty Hyde Bailey, then in charge of the extension work of the state, to offer to the farm home the same educational opportunities as had been offered to the farmer through correspondence and lectures. The work for the farm women started with a circular letter sent through the farm bulletins to the farm women with the request that they should reply if they were interested in a course parallel to that of their husbands. Two thousand replies were returned at once with the request for enrollment in what was called a Reading Course for the Farm Home.

Following the publication of the letter to the farm women and the correspondence that it called forth, a bulletin on Saving Steps was sent to the women who had expressed their interest. This bulletin was followed by one on Sanitation of the Household and a subsequent one upon Food for the Farm Family. Correspondence was begun with housewives in the State who began to use the college as a source of information. Through visits to granges, farmers' institutes and farm homes, instruction was given upon subjects relating to the management of the house. The printing of the bulletins was irregular until October, 1911, when the college was enabled to reorganize its reading courses and since that time a monthly publication called the Cornell Reading Course for the Farm Home has been issued. In the course of a few years there have been published and circulated from forty to fifty publications upon some phase of housekeeping and thousands of letters are written each year to farm women who desire special information upon topics with which they are closely connected.

As a result of the Reading Course and individual study there have been organized in various sections of the State neighborhood meetings made up of those who wish to study together subjects presented in the Reading Course lessons. This plan offered social opportunity and a subject of common interest for discussion.

After the reading courses and the reading clubs were successfully under way Dr. Bailey proposed that there be a winter course in Home Economics which would be similar to those then organized in general agriculture, horticulture, dairy industry, and poultry husbandry. The course was thrown open to the public in order to arouse an interest in the scientific side of housekeeping. There were some women from the farms attending this course but in the first year the larger number of women attending lived in the city of Ithaca. There was then no instruction in Home Economics within the university. Lecturers were sought from other universities and technical schools to give courses at the college during the winter of 1906-7 and a most unusual program was presented in this winter course.

There had never been expressed any great interest in courses in Home Economics for the registered women of the university. However, a three hour course in the College of Agriculture with university credit was offered to about fifteen registered men and women from the College of Arts and the College of Agriculture. This was in 1905-6. Permission was given by the Board of Trustees in 1907 to establish a Department of Home Eco-
nomics in the New York State College of Agriculture. Rooms were given in the east and west ends of the fourth floor of the main building of the College of Agriculture. They were attic rooms, but considered a good place for starting a piece of work which would eventually need larger quarters. For its extension and administrative work the department began with three offices and a food laboratory suitable for twenty students. Afterward a room that had formerly been used for photographic purposes was transformed into a kitchen and dining room. While these were small accommodations much of the planning and organization for the future was undertaken here.

The growth of the department as was anticipated soon necessitated larger quarters. The Legislature of 1909-10 authorized an appropriation of $154,000 for the construction of a new Home Economics building. The new building was first used during Farmers’ Week in February 1913.

Farmers’ Week had become a regular event at the New York State College of Agriculture when many farmers and their wives came to the college for a week of study and conference. It was plain that something should be provided for the interest of women who were seeking to do their piece of work better. An occasional lecture was offered during the first Farmers’ Week on domestic subjects and as years have passed the days of Farmers’ Week have been filled with lectures, demonstrations and conferences.

The history of Home Economics has justified the effort made to start the unusual in an eastern institution. The Reading Course began with 2,000 enrollment. In 1914 after the list has been revised at various times it numbers 38,000. The clubs began with half a dozen in various parts of the state; at the present time they number over ninety, which show marked development of the individual women and the effect of their interest upon the community. Attention was given in the first two years of Farmers’ Week to one or two lectures upon home-making subjects. The program of 1914, was planned for every hour of the day devoted to lectures, demonstrations and exhibits upon Domestic Science subjects. The extension schools in Home Economics had first the occasional lecture from the department in connection with the program in agriculture; in the present year there are more applications for schools than can be taken care of during the entire season and one instructor is devoting her entire time to this project. Four persons registered the first year of the organization of a course in Home Economics; the entering class of 1914-15 numbers fifty. The department now registers 250 students for the degree of B.S. while fifty more working for the degree of A.B. are electing Home Economics work. The first winter course had a registration of fourteen; the winter course of 1914, has a registration of forty, the number being limited because of the limitation of numbers on the instructing staff.

The department for its four year course embraces lectures upon foods, human nutrition, household management, house planning, house furnishing, sanitation, sewing, institution management, extension and the history of woman and her work.

The purpose of the department of Home Economics is to develop and redirect woman's work; to train her for the profession of home making and at the same time to give direction to her probable need of earning her living.

Professional opportunities are offered to the students of Home Economics in teaching, institutional management, business enterprises, designing, research, care of children and social welfare.
With this issue, the COUNTRYMAN wishes to present its readers with a history of the College of Agriculture. There are many very interesting features in the early development of the College about which the students of today know nothing. As this material should be collected while the men who are most intimately acquainted with the early days of the college are still with us, the COUNTRYMAN has gathered and put into a permanent form much of the available information. In our endeavors we have been most ably assisted by our friends and to them we now wish to express our sincerest appreciation, for without their help and cooperation, our efforts would have been futile.

The ten year plan adopted by the Board of Trustees of Cornell University for the extension of the New York State College of Agriculture involves certain changes in Roberts Hall. Additions are to be placed at the west wing and at the east wing. That portion of the building now fronting on the quadrangle is to be re-fronted so as to make a part of the quadrangle development. An item of $75,000 has been submitted to the legislature for the erection of the west wing, for which plans have already been made. This wing will be four stories in height and will conform to the existing style of architecture.

The College of Agriculture is feeling the need of a suitable building which might be known as a Hall of Zoology and Entomology. In this building could be accommodated all the teaching and research in general zoology, systematic vertebrate zoology, and the elective work in economic ornithology, and field zoology; also all of the pure and applied entomology, limnology, parasitology, and fish culture. The Agricultural College Council and the Trustees have approved a recommendation by the Director that steps be taken to secure data which may be later submitted to the State Architect in order that he may prepare plans for such a building.
The Summer School of the College of Agriculture, which has been such a popular feature for the past few years, will have to be abandoned the coming year unless special provision is made for it at the forthcoming session of the State Legislature. The item for the Summer School was passed by the last legislature, but was one of those vetoed by the Governor. The Agricultural College Council has approved the recommendations of the Director of the College for two special items intended to take care of the Summer School for the years 1915 and 1916. The Trustees have also approved this item, and it will be presented to the legislature for action.

Farmers' Week is coming; it will extend from February 8-13. Are you planning to visit the College then? Farmers of New York State, the efforts of both the faculty and students of the College are devoted during this week, entirely to your interests. You will hear lectures on the latest phases of Agriculture, you will be able to attend the conferences, you will meet many of your old friends and make many new ones, and you will have an opportunity of seeing what your College is doing for agriculture in New York State.

Former Students, can you afford to miss this chance of meeting your old class mates and professors again? Come and bring your family. Remember the dates, February 8-13. Write to the COUNTRYMAN for a Farmers' Week Souvenir, which will be sent free of charge on application.

On December 12th will come the annual Agricultural Banquet. It will be held in the Home Economics Cafeteria and the tickets will be sold for $1.00 per plate. The committee has been fortunate enough to secure President J. L. Snyder of the Michigan Agricultural College, East Lansing, Michigan, as principle speaker of the evening. Professor C. H. Tuck will act as toastmaster. Every student who can possibly do so, should attend this banquet for it is the one big Ag. “get-together” meeting of the year and an affair which no student of the College should miss.

To each Short Course student, THE COUNTRYMAN extends a welcome. You who have been here before know the good things you may expect; you who are here for the first time will soon realize that the pleasures you experience will make the twelve weeks fly. The principal purpose of your being here is to become a better farmer. All the wonderful facilities and laboratories of the College are at your disposal and the instructing force is offering you the best that they have. Your class room work, the University library, the lectures outside of your classes which are offered in the University, are open to you. Make use of them. Keep your eyes open and use your ears. Do not get it into your head that you know it all. None of us do. If you make the best of your opportunities, truly this twelve weeks will aid you in becoming a better farmer, a better citizen, and a better man.
REMINISCENCES OF EARLY CORNELL DAYS

By William R. Lazenby, '74
Professor of Ohio State University

My earliest recollection of Cornell dates back to the Fall of 1869, I entered the University with the class of '73, but sickness in my father's family called me home about the Christmas holidays. I was unable to resume college life until September, 1870, re-entering at that time as a member of the class of '74.

My first impression of Cornell was the originality and boldness of the plan conceived and the rawness of the conditions then existing. Coming from a more nearly level and more fertile section of New York, the rough and then mainly unimproved “East Hill” looked unpromising; and the farm that our far-sighted Founder had so generously donated as a training ground in the art and science of agriculture, and a means of support for poor students, seemed impossible.

I was one of a half dozen or so, who up to that time had the faith and courage to elect the four-year course in agriculture, and one of the two who completed the course in 1874.

Prof. John Lemuel Stone, a life long friend, was the classmate, who competed with me and won the same distinction.

When we received the degree of Bachelor of Agriculture from Cornell, but one like degree had been conferred, and that was upon Charles Loudon Lacy of the class of '73.

Agriculture was not in the saddle at that time, and in the whole catalogue of human pursuits not one was so dreaded and deprecated by the average college man. It was something he didn't know, and didn't wish to know.

As a shy, country youth I was impressed, not to say overawed, by my professors. In those early days practically all the instruction and training was given by the heads of the various departments. It was our good fortune to come into close and intimate contact with enthusiastic and inspiring teachers. How patient, how devoted, how self-sacrificing most of these men were. President White and Vice-President Russell, in spite of their administrative duties, met classes with regularity and astonishing frequency, and had a personal acquaintance with nearly every student.

I recall on one occasion during my freshman year, that two or three of us were summoned to appear before President White to answer the complaint of unsanitary, or rather uncleanly, milk furnished by the University farm to Cascadilla, where many of the professors and students boarded. As we milked the cows we were held responsible and were called upon the carpet to answer for our carelessness. We went in fear and trembling, certain that we were to lose our job, which because of its steadiness was accounted a good one, and fearing that we might be dismissed from the University.

How joyfully surprised we were when President White greeted us as cordially and courteously as if he were honored by the call. He congratulated us upon working for our own support, and said that inasmuch as we had nothing to do with the dairy management except to milk the cows we could scarcely be blamed for the uncleanliness of the milk. I am quite certain that being met in this way, there was no danger of any future delinquency on our part, however culpable we may have been heretofore.

In the early days White Hall and Morrill Hall, or as they were then known, the North, and the South Building respectively, were mainly used as dormitories, and the students who roomed therein were under a semi-military discipline. We were obliged to "fall in" at a certain hour in the morning and march in a more or less regular form to Cascadilla where we boarded. The discipline was any-
thing but strict, and the disorder in
the ranks, and at the table was some-
thing that would not be tolerated in
these days. In fact it was so difficult
to maintain order that the military de-
partment soon asked to be relieved of
all charge of the dormitories. When
this was done matters improved and a
more or less efficient system of self-
government was obtained.

Looking back to those tumultuous
scenes on the Cornell campus, and in
the streets of Ithaca, the cause ap-
ppears evident. Men of marked indi-
viduality, were attracted by the embryo.

THE ARCH BUILT TO CELEBRATE THE
First Crew Victory in 1875

onic university. Red-blooded, adven-
turous, high-spirited young men made
up in large part that cosmopolitan
company that first besieged the doors
of Cornell. Some came from the nar-
rower sectarian colleges demanding a
larger liberty of thought and action;
others had caught a glimpse of the
beneficent possibilities of science and
were no longer satisfied with the "old
education." Not a few came because
here was an opportunity to earn their
own support by the labor of their
hands. Undoubtedly there were some
that came because they were sent; for
the most part however, we were a
group of determined, independent,
imaginative, idealistic young men.
Such are not readily enslaved by petty
conventions, and are often the vic-
ims of misdirected enthusiasms. The
burning of out buildings, the demoli-
tion of temporary bridges, the firing
of the cannon at midnight, were pro-
tests against the supposed slackness of
those in authority.

Many things were done in a mere
spirit of frolic. I recall the bonfire in
front of Morrill Hall. How we labored
to collect the material in a huge pile
reaching well up to the second story
windows. How diligently we sought
for barrels of tar and other inflam-
mable substances that were being used
in the construction work then in pro-
gress on the campus. How long after
midnight when the fire was well started
we rang out the alarm by using the
great bell of the University chimes,
rousing the whole town. The posi-
tion of the fire and the reflection from
the windows caused everyone to be-
lieve that the only completed build-
ing on the campus was burning and
that the students who occupied it were
entrapped and would miserably perish.
The excitement, the confusion, the
anxiety, cannot be described, it was a
heart-breaking moment for the
Founder, Ezra Cornell, for the Presi-
dent, Andrew D. White, and many
other friends of the young University.
The trick was soon discovered, and
possibly no great harm was done, al-
though Dr. Wilder maintained that at
least one death that occurred soon
after this incident was hastened, if
not directly due to the shock caused
by it.

In addition to these all too frequent
scenes of turbulence and disorder there
was much harmless fun of a quieter
sort.

I remember as will many another
that David Starr Jordan, who from
his recognized ability as a naturalist
was called "Agassiz II," was a leader
in this form of diversion.

The best students required some
outlet for their pent-up enthusiasms,
just as every typical boy requires some
outlet for his overflowing animal
spirits.

Two organizations at Cornell in
those early days I found signally attractive. One was the Irving Literary Society and the other was the Natural History Society. The former was burdened by debt, and for a while its life was at a low ebb, but A. J. Lamoureux, F. W. Halsey, D. E. Salmon, William Hankins, and a few others, came to the rescue and the Society took a new lease on life and became prosperous. It was an excellent school for training men to think upon their feet, and to express their thoughts with force and clearness. Such training is invaluable.

It was an inspiration to attend and take part in the meetings of the Natural History Society. Jordan, Dudley, Comstock, Kellerman, Copeland, Barnard, Job, Lemonds, and others who became distinguished naturalists were active members. Dr. Wilder was a regular attendant, and his enthusiasm and encouragement contributed not a little to the abundant and all-inspiring success of the society.

Years ago but long after I left Cornell it was my thought that it would be a splendid thing to resurrect these two societies. That was a mistake. The atmosphere, the conditions, the attitude, the spirit of those old days could not be replaced, and without this, these societies could not thrive. Times have changed and student organizations have changed with them. Let us hope the changes are not for the worse. The societies I have referred to are of the past. They rest in their graves. Let them rest in peace.

I was an active member in two organizations outside of the University, that did much to encourage and stimulate the feeble, flickering life of its department of agriculture.

One was the Ithaca Farmers' Club, and the other was the Ithaca Grange. A member of the latter was a representative at a meeting of the New York State Grange where a most scathing series of resolutions were presented criticizing and condemning in unmeasured terms the so called "Agricultural Education" at Cornell. The resolutions asked the State Legislature to revoke the charter granted the University, or if this could not be done, it called for the abolition of the department of Agriculture, and the re-establishment of a new college at some other place. It was a critical moment. There appeared to be no opposition to the resolutions.

The representative of the Ithaca Grange, one of the few agricultural students in Cornell, quietly arose and asked a few pointed questions. First, he wished to know "how many members of the State Grange had visited Cornell?" Not a hand was raised. "How many could tell anything about the work Cornell was doing for agriculture?" There was no response. Then, "Was it just, was it decent to condemn unheard and unknown? No! it was un-American, it was unmanly, it was unjust; the vilest criminal was not so treated," etc.

The result was that instead of adopting the resolutions, a committee was appointed to visit and investigate the University.

The committee came and while it deplored the fact that few students had elected the course in agriculture—the opportunity was there, and the University was doing its full duty under the organic act of the Federal government.

The committee also learned something of the grand research and experimental work that was being done by Dr. Law, Dr. Caldwell, and Professor Roberts, and it could do nothing less than write a signally favorable report. From this time the tide turned, and agriculture at Cornell began to prosper. The progress was slow. From 1869 to 1879 not more than fifteen, as I remember, had received the degree of Bachelor of Agriculture, while the total number of graduates from all departments was not less than five hundred and fifty. It is no easy task to raise agriculture from a plane of servility and drudgery to one of self respect and genuine independence.

Every son and daughter of Cornell ought to rejoice that she has taken so large and so honorable a part in this great work.
THIS is not a wild animal story, nor is it a story of wild animals. It is an attempt at composite word picturing applied to a group of men with whom it has been my great pleasure to come in contact during the past twenty-five years. It is to be regretted that the title has limitations. I have known a good many Cornell girls. In fact, my knowledge of some of the boys is so closely associated with that of certain young women that I may unconsciously portray characteristics belonging to both. How, for example, am I to separate and visualize in a composite way certain characteristics of one who has been quite close to me in past times, and who came to Cornell with little more than a determination to get the best that hard work and persistence would secure, and who left with a thoroughly serviceable and practical education, a fairly good bank account, and a most excellent wife. This friend has attained eminence in the world at large, and he is not the only one that has benefitted from a Cornellian partnership that will last through life. But this is a composite picture, and I must not stray too far from the text.

Cornell University has turned out a great many good men. Many of these I have known and honored for their ability and far reaching grasp on the practical affairs of life. The men from the College of Agriculture I have not only had the pleasure of knowing, but I have had to study them from a good many different angles. In the early days of agricultural work in this country, good men were very rare, and those whose fields of labor required men of special training were constantly on the lookout for promising material. I sometimes wonder if our young even now realize how much of this is done, and how much of one's future depends on always being prepared so that the door of opportunity swings without effort and does not need to be pushed, as many young men seem to think is the case. In those early days, soon after the first Agricultural Experiment Stations were established, we used to "scout" around much after the fashion that baseball magnates do at the present time hunting for promising men in the more specialized fields of botany, horticulture, plant pathology, entomology, and kindred sciences. It came to be generally recognized, that at Cornell we could usually find men of clearly defined ideals, common sense, and abounding enthusiasm.

Here, then, I have developed all the high lights of my composite picture of Cornell men—clearly defined ideals, common sense, and enthusiasm. In all my experience with young men, I think one of the most unique, so far as enthusiasm goes, was with a graduate of the institution who, while he had specialized in a rather dry subject, was so brimful of enthusiasm about it that some of the greatest business organizations of the country became his most devoted followers. That boy could walk into a room of railroad magnates with an armful of railroad ties, telegraph pole, and bridge timber fragments, and in half an hour go very far toward convincing them that timber preservation was not only a moral but a civic duty, and that any individual or corporation that did not recognize this fact would regret it till the end of time. Enthusiasm here was the dominant characteristic, but it was coupled with other things that have written this man's name high on the roll of those who have served their country and their college well.

In our picture we have brushed in, as it were, our background of enthusiasm with an illustration. I have often been struck with the clear ideals presented by many of the boys from Cornell. It will be noted that I do not use the term "high" ideals. I consider clear ideals a better one. A
A large proportion of the boys that have come from Cornell have been gifted with that most important attribute—common sense. It is interesting to note, and to weigh, and consider that fine impalpable something which, for lack of a better name, we call the spirit of things—an atmosphere. It is intangible. It cannot be described, yet, it exists, and plays a vital part in the affairs of life. At Cornell there is an atmosphere of common sense which helps men to see things in their true perspective, to look up—not down—to view the landscape afar—and not the ground at their feet.

Someone has defined common sense as very uncommon sense. It has been said that there are two kinds of common sense, near common sense and supernal common sense. I recall discussing a problem once with some young men, fresh from college. The discussion was sensible enough, but we never got out of the valley. The fields were always at our feet. We could not see beyond the hills. There was one among us, a Cornell boy by the way, who had a vision. He led us to the hilltops and pointed out that there were fields and more fields beyond our fields, and if we wished to render the greatest service we must not neglect these fields. This man was gifted with supernal common sense. He had imagination tempered with that wisdom which connects facts with the affairs of life. He has had opportunity to follow the light of his vision, and his work has been a success.

The past ten years has been a topsy-turvy period in the agricultural work of the Nation. There has been a tremendous demand for knowledge, and young men and young women have been rushed to and through college at an unprecedented rate. So rapid have been developments that it is no longer practicable to give that careful study to individual traits in men that was once an essential factor in the organization of research and other types of work. Young men graduating from college find themselves, as a rule, placed where they must be able to do team work. Here are to be found some of the finest traits that go to make up real men, a willingness to sacrifice personal interest for the good of the whole. The effacement of self and the recognition of the fact that the real issue is the problem or problems to be solved, and not the personal feelings of the individuals involved. Most Cornell men I have known have been gifted with this ability to do team work. I use the word gifted. After all, is it a gift, or is it the outflow of Cornell spirit? I think it is the latter.

Clearly defined ideals and common sense stand out preeminently in our picture. Enthusiasm has been mentioned, and perhaps that is enough. If I should ever come in contact with a Cornell man, and especially a College of Agriculture man, that could not be made to enthuse on some subject, I should feel the need of calling in either a spiritual or medical adviser, or both. Enthusiasm is a part of a Cornellian's religion, although, in times past, some of my good friends have told me that of the latter Cornell had none. In this connection I recall two stories told me by Cornell boys, which are well worth repeating. One was told by the son of a country minister who had hoped that his boy might attend a seminary in the adjoining county where the so-called sciences were looked upon as subjects to be avoided
on account of their supposed conflict with scriptural teaching. The boy heard of Cornell, found out all he could about how to get there, started in to earn some money to pay his railroad fare, and when this was accomplished he told his father of his intentions. The father had little to say, but he acted as if his boy had taken the road to utter darkness. In time the father found that he had been mistaken and became one of the staunch supporters of the University. The boy pushed his scientific work into new fields, and today is a national figure, yes, more than that, for his work is known throughout the world.

Back in a country district there was another boy whose people had been farmers for generations. He was one of a numerous family, and both father and mother were willing and anxious to make sacrifices in order that he might go to a nearby theological school and prepare for the ministry. The boy loved the woods and fields. He was one of the kind that found books in running brooks. He began to study the woods and plants. He came to know the wild things about him. All the little timid folk of the woods were to him friends that he loved and that he must know more about.

There came to him, from the outside world, rumors of a school that appealed to him because it taught the things that were related to his life. Finally, he made up his mind that he would go to that school, and this he did despite the warnings of neighbors and friends who met a number of times in solemn council around the old kitchen stove and pointed out the dangers which beset young men who strayed too far from home and who leaned too strongly toward what they called the scientific doctrines. This boy came to Cornell, and Cornell may well be proud of him for today he is teaching his favorite subject in a sister institution.

Is my picture a true one? I hope it is. Clear ideals, common sense, and enthusiasm. May all Cornell boys possess them as fully as those whom it has been my pleasure to know.

THE FIRST BANQUET OF THE COLLEGE OF AGRICULTURE, JUNE 11, 1891

GREETING!

The students of agriculture in Cornell University give this entertainment and banquet in honor of the promoters of agricultural education and in testimony of their belief that a world of usefulness and pleasure awaits the educated farmer. We must tell to the world that the higher education is necessary to the best agriculture. We must tell our friends of our enthusiasm for the generous life of the country. We must say that we believe in our ability to make good use of every lesson which the University has given us. We must say to every man that our first love is steadfast, our hopes are high, and our enthusiasm is great. Our hearts are so full that we must celebrate!

Explanation

The eatables served at this banquet, with the exception of sugar, salt, and spices, were grown on the University farm and gardens, and were prepared for the caterer by the students of the College of Agriculture. The front cover of the program is of Oak cut on the University farm, and the back cover is of Hard Pine used in the construction of various buildings of the department. The wool used in tying was sheared from a Shropshire in the farm flock, and the Raffia is that used in the Horticultural Department. In the case of some of the articles on the menu students assisted in filling the soil, sowing the seed, cultivating and harvesting the crop, feeding the stock and preparing it for consumption. Thus by directing life through law they transformed crude soil into plant tissue and then again into highly organized animal substance, so completing the cycle of life.
STUDENT ACTIVITIES IN THE COLLEGE OF AGRICULTURE

Part I

By Professor J. E. Rice, '90
Professor of Poultry Husbandry, Cornell University

The Cornell agricultural students are constructively aggressive in student affairs. They have always shown the true Cornell spirit. This spirit is virile, enthusiastic, helpful and democratic. The agricultural college spirit is a long time tradition and a present day reality.

The student activities, while many and varied, are exceedingly well balanced. They include the field of educational, social, athletic, administrative and philanthropic activities.

Educational—A marked characteristic of agricultural student activities is a serious-minded, educational viewpoint. It is a true and common saying that the agricultural students are "here for business." The large number of departmental clubs, their programs and discussions, and the numerous public speaking, debate and judging teams, are the best evidence of the motives which exert a controlling influence in student affairs.

Social—A splendid spirit of sociability has existed from the very first among the agricultural students. The success which has attended the many social activities is the best possible proof of the fraternal spirit which prevails. These activities have found expression in a long series of successful college, class and club banquets, entertainments and excursions; husking bees; "get-wise," "get-together" and "get-busy" meetings. In these the men and women students and the faculty have worked together joyously, enthusiastically and harmoniously. The agricultural college assemblies are unique and characteristic. Here the Dean, the men and women students, and the faculty and their wives cooperate together in a splendid spirit of confidence and good fellowship. While this function may be considered as belonging to the Dean, it is managed by students whose efforts provide the program, the decoration and the music, and is presided over by the President of the Agricultural Association.

Athletic—Agricultural students score high on "constitutional vigor." They have an abundance of good, red blood. In proportion to the number of students enrolled in agricultural courses, an historical review of athletic events reveals a record of achievement of which any college might well feel proud. It is a record in which the zeal of the agricultural student, as a loyal Cornellian, is evident. The long list of agricultural students, who have participated in "Varsity" events most of whom have won their "C's" and brought honor to their Alma Mater, indicates that they have first concern for the welfare of the University.

Administration—The students of the agricultural college are essentially a self-governing body. The morale, as judged by the faculty and students of the University, is of a high order. The Agricultural Association, as a centralizing organization has control of the general student activities of the college. The success with which many important movements have been inaugurated and carried through, speaks well for the efficiency and the public-spiritedness of the men and women who have carried the responsibilities for student affairs. They can be trusted to govern themselves.

Philanthropic—A spirit of service pervades agricultural student activities. In the ardor of athletic achievement, in the pleasure of social affairs, in the stress of administrative duties, in all student activities, there prevails a keen desire to render service to the public, to the University, to
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the college, to the department and to fellow students while in college. This type of activity has found expression in many large projects—the "student loan" fund, the "girls' club house," the purchase of a "gig," the annual awarding of medals, the purchase of suits for athletic teams, the employment of directors for musical clubs, the editorship and management of the Cornell Countryman, and not the least in importance, by the large amount of student committee work in the University, College and department administration, where a vast amount of personal initiative, hard work and some financial sacrifice are involved. In all these efforts a common sentiment prevails which frequently finds expression in the familiar slogan—"Do it for Cornell," "Do it for the college." The "creed" that follows is a fair statement of the attitude of Agricultural students toward student activities.

The Creed of the Students of the College of Agriculture

1. We believe that we are here primarily to secure an education.

2. We believe in living a well-balanced, symmetrical life.

3. We believe that to develop a well-rounded, vigorous, efficient manhood and womanhood we must be trained harmoniously, mentally, physically, morally, and that in one person there should be found the highest average of scholarship, physical skill and moral courage.

4. We believe that in order to develop symmetrically we must study faithfully, think clearly, play lively, eat heartily and sleep soundly.

5. We believe in inter-college athletics because of its wholesome emulation, mental relaxation, physical development and moral stimulus.

6. We believe that play is to the body what a good laugh is to the mind and a good deed is to the conscience—refreshing and invigorating.

7. We believe that it is no sin to play to win.

8. We believe that it is better to lose honestly than to win dishonestly.

9. We believe that true sportsmanship will recognize and heartily applaud a successful play on the part of an opponent.

10. We believe that the true measure of victory is in the quality of the opponent and fairness of the play, rather than the size of the score.

11. We believe that all selections and elections to positions of honor or trust within the gift of the students must be made wholly on a basis of individual merit.

12. We believe that efficient service and accomplishment should be suitably rewarded, whether in the realm of scholarship, athletics, journalism, public speaking or other legitimate student activities.

13. We believe that the greatest rewards are to be found not in medals, shingles, diplomas or applause, but in the consciousness of a work well done, a game well played, an honor fairly won, and that we have contributed to the honor and success of others.

14. We believe that every student owes an obligation to himself and herself, to the college, and to the University, to do something, while here, for the good of others and for Cornell.

15. We believe that the students of the College of Agriculture should set a standard for wholesome play, right thinking and clean living.

16. We believe that the students in the College of Agriculture subscribe to this creed and strive to live up to it, and that in this they have the hearty co-operation of the College staff.

(To be continued in the January issue:)

(Note. This is the introduction of a series of articles on Student Activities in the College. In the next issue there will appear a list of the Ag. men who have participated in university activities, tables showing what the College of Agriculture has accomplished in intercollege athletics, and a list of all former Presidents of the Agricultural Association and Editors and Business Managers of the CORNELL COUNTRYMAN, and a statement of their records since leaving Cornell.)
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With the steady application of a power which has been remarkable, the Cornell football eleven has so completely overwhelmed her opponents in the last seven games this fall that there can be no doubt that the Ithacans are masters of the gridiron. A "Big Red Team" which was once the boast of all Cornell undergraduates is no longer a vision, it is truly a reality. Including the Michigan game, Cornell has won 233 points to 42 credited to her opponents. While all glory is due the Red and White warriors, much credit must be given to the splendid coaching of Dr. Sharpe, Dan Reed, '98, and Ray Van Orman, '08. The work of every player on the squad is worthy of comment, but the sensational playing of Quarterback Barrett, '16, Halfback Shuler, '15, Fullback Phillippi, '15, Ends Shelton, '16 and Captain O'Hearn, '15, and Center Cool stand out as the shining lights. The season was brought to a very fitting close by the defeat of Pennsylvania.

The scores for the season are as follows:
- Cornell 28, Ursinus 0.
- Cornell 3, University and Pittsburgh 9.
- Cornell 3, Colgate 7.
- Cornell 21, Carlisle 0.
- Cornell 48, Bucknell 0.
- Cornell 48, Holy Cross 3.
- Cornell 26, Franklin and Marshall 3.
- Cornell 24, Pennsylvania 12.

An Information Bureau for the College State farmers will be able to have a ready access to the news and information of the College of Agriculture. By this new method a much larger number of people will be reached than by the present bulletins and lectures. The new system is similar to that which was instituted by Dr. Galloway, when he was Assistant Secretary of Agriculture at Washington, D. C.

Dr. Galloway describes the work as follows:

"Briefly, our office of information will act as a sort of clearing house between the College and the public, direct and through the press, for the purpose of increasing the amount of printed agricultural information developed by the College and to heighten the direct educational value of published matter. We hope to bring about a better understanding on the part of the public of the work of the College of Agriculture, of the functions of the various departments of the processes on which it bases its recommendations, and thus bring about a closer cooperation between the College and the farmers of New York State."

Mr. Bristow Adams has been secured to head this work and he will assume charge about December 12th.

(Continued on page 240)
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Kills lice on poultry and all farm stock. Dust the hens and chickens with it, sprinkle it on the roosts, in the cracks, or if kept in the dust bath, the hens will distribute it. Also destroys bugs on cucumber, squash and melon vines, cabbage worms, etc., slugs on rose bushes, etc. Comes in handy sifting-top cans, 1 lb. 25c; 5 lbs. 60c; 25-lb. pail $2.50 (except in Canada and the far West). I guarantee it.

This is the time of the year when the price of eggs is high and your hens ought to be making up for the small egg crop during moultting.

But hens need a tonic during the winter months, because the lack of exercise and green stuff and also close confinement impairs the digestion, makes the system sluggish and the egg organs dormant. With the knowledge I have gained in a lifetime experience as a veterinarian, doctor of medicine and successful poultry raiser, I have succeeded in compounding a scientific preparation that will make poultry healthy, make hens lay and keep the egg organs vigorous and active.

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contains ingredients for toning up the digestive system and enriching the blood. It also contains tonics for toning up the dormant egg organs and making hens lay, internal antisepsics for preventing and remedying gapes and other ailments, also bone and shell forming ingredients. Every single ingredient in my Pan-a-ce-a (printed on every package) bears the recommendation of the U. S. Dispensatory and other high authorities. Now read this carefully:

| So sure am I that Dr. Hess Poultry Pan-a-ce-a will make your poultry healthy and make your hens lay that I have authorized my dealer in your town to supply you with enough for your flock, and if it does not do as I claim, return the empty packages and get your money back. Buy now on that guarantee. |

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My new poultry book tells all about Pan-a-ce-a. It's free.

DR. HESS & CLARK, Ashland, Ohio
An Information Bureau for the College.
Continued from page 236.

Mr. Adams is a graduate of Leland Stanford University and while there took an active part in bringing the publications of that institution to their present standard. Later he was employed by Dr. David Star Jordan, 72, as his assistant in the Alaska Seal Fisheries Industries work. After considerable experience with newspapers on the Pacific coast he became known as an educational lecturer of note. Mr. Adams is an extremely skilled illustrator, most of his slides being of his own work.

For the following four years he was interested in Forestry Service work at Washington, part of the time in connection with Gifford Pinchot. Since that time he has served in various capacities in that service. Lately his work has been more with the information end of the department, in which position he acted until his resignation last week to accept the appointment here.

Although plans for such an innovation are immature there is a possibility of installing in the College of Agriculture a department devoted to journalistic work. If these plans culminate Mr. Adams will assume the head of that department.

Advanced Reading Course in Fruit Growing

With a gain in total enrollment the past year amounting to fifty-one per cent., the Fruit Growing Reading-Course for the Farm has been encouraged to add an advanced Reading-Course in Fruit-Growing in cooperation with the Department of Pomology. In the Advanced Reading Course a text book will be used, and the work will be conducted somewhat in the manner of a correspondence course. Professor H. B. Knapp of the Department of Pomology will give individual attention to each member in the new course—which will consist of grading answer papers and making comments and suggestions upon the work of the students. Former students and others who wish to brush up on the subject of Fruit-Growing will find here an excellent opportunity to do so. Applications should be addressed to the Reading-Course for the Farm, College of Agriculture, Ithaca, N. Y.

The Mailing Department

Few of us realize the work that is being accomplished by the Mailing Department. This year it is enormous. The duty of the department is to circulate the official publications of the Agricultural College, throughout the entire State. For the year 1913-14 the total number of persons on the mailing list was 285,651. This list is classified as follows: Persons desiring Circulars of the Experiment Station, 25,283; copies of Reading Courses for the Farm, 5,877; copies of Reading Courses for the Farm Home, 37,981; Rural School Leaflets, 217,410. The year 1913-14 shows a total of 77,577 copies of the publications issued per week; an increase of 9,293 over the preceding year.

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<tbody>
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<td>General Sales Agent</td>
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<tr>
<td>BUFFALO, N. Y.</td>
<td>Hartford, Conn.</td>
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New York State College of Agriculture at Cornell University

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<tr>
<th>Breed</th>
<th>Eggs laid 1st year</th>
<th>Eggs laid 2nd year</th>
<th>Eggs laid 3rd year</th>
<th>Total Eggs laid 3 years</th>
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<tbody>
<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>260</td>
<td>191</td>
<td>648</td>
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<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>131</td>
<td>120</td>
<td>536</td>
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<tr>
<td>Cornell Surprise</td>
<td>186</td>
<td>186</td>
<td>186</td>
<td>558</td>
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<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>195</td>
<td>220</td>
<td>650</td>
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TABLE OF CONTENTS
JANUARY, 1915

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontispiece</td>
<td>270</td>
</tr>
<tr>
<td>Horse Breeding After the War</td>
<td>271</td>
</tr>
<tr>
<td>What the Government Is Doing in Organizing Marketing Work in Farm Products</td>
<td>274</td>
</tr>
<tr>
<td>Workmanship as a Factor in Making Good Butter</td>
<td>281</td>
</tr>
<tr>
<td>Fancy Cheeses</td>
<td>287</td>
</tr>
<tr>
<td>The New Milk Ordinance</td>
<td>291</td>
</tr>
<tr>
<td>The Relative Value of Foods for Dairy Cows</td>
<td>295</td>
</tr>
<tr>
<td>Studies in Silver and Gold from the Dairy</td>
<td>298</td>
</tr>
<tr>
<td>Boys' and Girls' Contest Clubs</td>
<td>300</td>
</tr>
<tr>
<td>Editorials</td>
<td>304</td>
</tr>
<tr>
<td>Campus Notes</td>
<td>306</td>
</tr>
<tr>
<td>Former Student Notes</td>
<td>310</td>
</tr>
</tbody>
</table>
An Inspiration to Any Prospective Breeder—Purebred Percheron Mares on Selma Farm, the Property of E. B. White, Leesburg, Va.
HORSE BREEDING AFTER THE WAR

An Era of Prosperity Prophesied

BY CARL, W. GAY

Professor of Animal Industry, University of Pennsylvania

There have been conflicting opinions, repeatedly expressed, on the outlook for horse breeding in view of the apparent increasing uses of motors for business and pleasure purposes. While we do not believe that the auto salesman’s dream of the motor crowding the last surviving equine off the earth into the chasm of oblivion, as pictured on the calendar of an enterprising automobile concern, will ever be realized, that is not the proposition we present.

What the motor has done to the horse is not of first importance just now. The problem in horse production today cannot be solved by looking backward. Unprecedented events are happening which will surely prove to be factors of the utmost importance in shaping the destinies of future horse breeders.

To what extent, quantitatively and qualitatively, will the future demand for horses be influenced by the war? This is the question which we shall endeavor to answer.

Immediate results command our attention first. Up to date, even the hind sighted horse raiser is conscious of a great load having been lifted from his shoulders. Horse breeders, perhaps, more than any other class of stockmen are self sufficient and disposed to operate independently of the dictates of the markets. Further-
vice. Great Britain alone has 120,000 at the front now. The mortality of horses both from shot and shell and from the severity of the service has been tremendous. It is estimated that not one of the horses which figured in the preliminary engagements of either of the contending armies is still in commission. Yet this war has demonstrated the absolute necessity for horses in both the cavalry and artillery branches of the service, in spite such waste on the other the "Unlimited" nature of the demand, with the continuance of the war, is apparent.

However, all of the horses taken do not constitute merely a surplus. The moving of which is the only means of influencing the market that they afford. Some of the heavier horses taken as gunners earn fair margins of profit for their producers. Furthermore, they are of a type that in ordinary times of business prosperity is in

![SADDLE BRED (KENTUCKY CHOICE—EDNA MAY) YEARLING, BRED BY MRS. RICHARD TASKER LOWNDES, DANVILLE, KY.](image)

The production of saddle horses is recommended to those breeders who are not interested in drafters.

of the extent to which motor vehicles have also been employed. England is already giving serious consideration to the remount supply that she expects to provide after this war is over. With such necessity on one side and quite active demand as wagoners of the lighter sort. The removal of such a great number of them must leave a market shortage when the call for business horses becomes normal again. Horse breeders are justified, there-
fore, in taking an optimistic view of the situation if only the normal market of the last few years is maintained.

But will there be no increase in the number or change in the class of horses required? Most assuredly there will, we believe this for several reasons. First, our own supply of market horses has been furnished largely by imported sires; with the cessation of importations the breeding ranks must be filled from home bred stallions. Calculated on the basis of imports this will create a market for several hundred more stallions than have previously been sold. Second, that the tide of import may be turned to export is entirely within the possibilities. The Belgian breed, an increasing number of the representatives of which have been brought to this country where they have met with marked favor each year of the last decade, will be almost annihilated, if reports be true, the Valley Meuse being the heart of the Belgian breeding district. Not only has the breed suffered so severely but Belgium is an agricultural country completely depopulated of horses which are of absolute necessity for the development of its resources.

The destruction of the French and British breeds has not been so extensive, but it will probably be some years after the war is over before there will be Percherons enough to meet the home demand, not to mention the horses required to do the farm work in France and effect the reconstruction which the war has made necessary.

CHAMPION LIGHT WEIGHT HUNTER, ALGOMA, OWNED BY BLENHEIM FARMS, BALTIMORE, MD.

There is an increasing demand for saddle horses of the Hunter type.

The London Livestock Journal looking both to the perpetuation of their breeds and to the supply of horses for home use is already deploring the number of British mares of breeding value that have been sacrificed.

The argument has been advanced that the small number of available horses at the conclusion of hostilities will make prices so high as to give the motor salesman cause to claim an
economic advantage. The prediction of high prices will sound good to the farmer who raises horses and we can hardly conceive of the price going so high as to make their use prohibitive. A more logical effect would be to induce farmers to produce horses well worth the high price offered for them and capable of giving a good account of themselves in competition with the automobiles, in the lines of service to which they were especially adapted. There seems ample justification for advising horse breeders to prepare for an era of prosperity but in doing this there is one note of warning—the increased demand that seems inevitable will be for horses of class. More intelligence and care than ever must be exerted in the breeding and growing if generous profits are to be reaped. We hope there will never be another war to help us to dispose of our unmarketable surplus; let us therefore accumulate none.

WHAT THE GOVERNMENT IS DOING IN ORGANIZING MARKETING WORK IN FARM PRODUCTS

BY CHARLES J. BRAND
Chief, Office of Markets and Rural Organization, Washington, D. C.

CONGRESS at its last session made an appropriation of $240,000 to enable the Secretary of Agriculture to acquire and diffuse among the people of the United States useful information on subjects connected with the marketing and distribution of farm products, and regarding cooperation among farmers in the United States in matters of rural credits and of other credits and of other forms of cooperation in rural communities, in order to provide a basis for broader utilization of results secured by the research, experimental and demonstration work of the Department of Agriculture, agricultural colleges and State experiment stations; and for the employment of persons and means necessary to accomplish these purposes.

The Office of Markets was established in the spring of 1913. The rural organization investigations, which had for one year previous to July, 1914, been carried on cooperatively with the General Education Board, were made a part of the Office of Markets in July, 1914, and this Office then became known to the public as the Office of Markets and Rural Organization. This Office is engaged in investigating problems relating to the marketing, handling and distributing of farm and non-manufactured food products, and, incidentally, to the purchasing of farm supplies and to the organization of agricultural communities upon a cooperative basis for the purpose of handling matter relating to rural credits, insurance, communication, and social and educational activities. The work is divided into the following projects:

Marketing and Distribution Investigations.
Cotton Handling and Marketing.
Cooperative Purchasing and Marketing.
Market Surveys, Methods and Costs.
Market Grades and Standards.
City Marketing and Distribution.
Transportation and Storage.
Marketing by Parcel Post and Express.
Marketing of Dairy Products.
Marketing Live Stock, Meats and Animal Products.

Rural Organization Investigations.
Rural Credit, Insurance and Communication.
Rural Social and Educational Activities.

Enforcement of the United States Cotton Futures Act.

MARKETING AND DISTRIBUTION INVESTIGATIONS.

Cotton Handling and Marketing. The work under this project has developed into several distinct lines, prominent among which are the surveys of primary markets, the promotion of cooperative purchasing and marketing associations. Under this project a study is being made of the methods of organizing and operating cooperative marketing and purchasing associations. Besides the general work on this project, much time and attention has been given to the subject of cooperative organization accounting.

This work includes a study of existing marketing organizations and compilation of laws, state and national affecting organized production and distribution, and the promotion of new marketing organizations and consumers' leagues, in so far as these activities may be carried on within the authority of the Department of Agriculture.

The general principles involved in handling accounts and audits for cooperative, profit-sharing, marketing associations are studied; the information secured is distributed and assistance is given in preparing special systems of accounting and auditing for various organizations.
Market Surveys, Methods and Costs. This work includes surveys of supplies available for market, rate of movement, outlets and prices of specific products by definite trade areas.

Last autumn special investigations were made in regions of principal production as to the quantities of cabbage and onions going into winter storage as compared with the amount so held during the preceding year. This information was secured in time to furnish some guidance to the truck growers of Florida and Texas before their field crops were fully set. This was followed by a survey of the acreage and prospective production of head lettuce in the Florida and South Atlantic as well as the Texas territory, and the conditions in each of these competing areas were made known to the other during the shipping season.

These local and preliminary surveys have been followed by systematic work in building up lists of correspondents, from whom to secure special reports on the acreage, prospective yield, market surplus, and crop movement of strawberries, tomatoes, cabbage, onions, peaches, and possibly other specific products during the coming crop season. The object is to acquaint each producing territory with conditions existing in competitive areas and to furnish prompt information to each concerning shipments from the other, with such data as it may be possible to secure on destination and on prices prevailing at terminal markets.

During the latter part of May and the month of June, representatives of the Office made extensive trips throughout the truck-producing sections of the Southern Mississippi Valley and Texas, with a view to determining exactly what sort of market information it would be practicable to obtain from each producing section. Methods of preparation and sale of truck crops were also studied; relative merits of field-packed products as compared with those graded and packed at railway stations, were noted; and inspections were made of the condition of packages and products after loading. Fairly detailed inspection of the methods of handling the tomato crop in the Mississippi and Texas districts were thus made. Preliminary inquiries were also made concerning the methods of handling...
the early potato crop of the Texas and Arkansas districts.

With the close of the last fiscal year these studies were transferred to the large distributing markets where the wholesale and retail distribution of typical shipments of various perishable products have been followed in detail, a complete record of the costs, profits, losses and wastes being kept. A tentative study is being made of the feasibility of establishing a telegraphic market news service.

A View of the Municipal "Eastern Market", Washington, D. C.

Showing enclosed building for the sale of meats, fish, etc., and the "farmers' line" along the curb.

Market Grades and Standards. National uniformity in market grades, standards, weights, measures, packages, containers and trade names is the end towards which the activities of this project are being directed. Valuable data have been secured in regard to state and national laws, and in regard to commercial customs and requirements concerning weights and measures, grades and standards for products, and standards for packages and containers, and cold storage regulations and requirements for farm products.

A great lack of uniformity exists in the various state laws governing minimum of waste and expense.

Several marketing surveys have been made in such municipalities as have requested aid of this Office. Investigations have been carried on at Jackson, Michigan, Providence, R. I., Trenton, N. J., Philadelphia, Pa., St. Louis, Mo., and Washington, D. C. Extensive reports to the interested agencies have followed these investigations containing advice and suggestions for improving marketing facilities.

In studying the problems involved in the provisioning of municipal populations, public markets operated by municipalities are being compared...
with those privately owned with a view to determining the absolute and relative advantages of each system; direct dealing between producers and consumers in city markets is being promoted wherever possible, the advantages of the various forms of city distribution are being investigated, in order to determine those best adapted to specific conditions; methods and costs of construction and operation of municipal markets are being studied, and upon request suggestions and information are given to city authorities and other responsible organizations.

Transportation and Storage. Under this project, problems involved in the transportation and storage of farm products are being investigated; methods to improve inadequate terminal and transportation facilities are being devised; shippers are being advised as to ways of securing proper car supply; the proper adjustment of minimum carload weights is being studied; remedies are being sought to overcome car shortages; and improvements in construction of specific purpose cars are sometimes suggested.

Marketing by Parcel Post. Experiments are being made to determine to what extent the parcel post and the services of the commercial express companies may be utilized profitably in marketing farm and non-manufactured food products. A very thorough investigation of the shipping of eggs in family-size lots of from one to ten dozens was made, and many different styles and makes of patented and unpatented containers were given a thorough trial. A full description of this study with the results is given in U. S. Department of Agriculture Farmers' Bulletin No. 594, entitled, "Shipping Eggs by Parcel Post."

Extensive experimental shipments of butter have been made from creameries to the Office of Markets and Rural Organizations, and from the Office to agricultural experiment stations throughout the country. Several kinds of containers and wrappers are being used in order to determine the requirements of a container which will carry butter successfully when liable to exposure to high temperature.

Studies of the possibilities of shipping fruit have included 28 crates of strawberries, which uniformly arrived in good condition with the exception of two crates, which were held in the city post office from Saturday until Monday, and had as a result, become somewhat deteriorated.

Numerous experimental shipments of vegetables have been made, including eight or ten barrels of lettuce and various experimental shipments of assorted vegetables, with satisfactory results when conditions were not abnormal.

Marketing of Dairy Products. The Office is cooperating with the Extension Department of the Massachusetts Agricultural College in a detailed study of the cost of milk distribution in a large number of typical Massachusetts cities of different sizes.

An investigation of the methods and costs of handling and marketing butter with special reference to the business of the cooperative creameries in Minnesota is being conducted in cooperation with the University of Minnesota, the State Dairy and Food Commission of that State, and the Dairy Division of the Bureau of Animal Industry of this Department.

In Wisconsin a cooperative investigation of the handling and marketing of butter and cheese has been undertaken.

Marketing Live Stock, Meats and Animal Products. A thorough and comprehensive survey is now being made of all phases of existing markets and systems of marketing live stock, meats and animal products, with a view to obtaining and disseminating information to be used in the work of improving methods in vogue and reducing the cost of the preparation of such articles. Efforts will be made to determine the economic factors bearing on the possible elimination of waste and increased efficiency of marketing systems.
In order to carry on the work described in the foregoing paragraph, a complete descriptive and statistical compilation of all centralized live stock markets in the United States has been undertaken, which will be followed and to some extent accompanied by the study of typical local markets in various sections of the country. Market classifications and grading systems applied to live stock and meats at representative markets will be described and illustrated in detail in order to standardize them where practicable and educate producers as under way looking to the solution of problems in rural credits, including those involved in the financing of agricultural operations and means for supplying long and short time loans on agricultural securities. An endeavor will be made to determine the nature and extent of losses in agriculture, the ways and means most helpful in reducing such losses or minimizing necessary risks, and how satisfactory facilities for agricultural insurance may best be established and conducted. Methods of communication in rural communities are being studied in the

**RURAL ORGANIZATION INVESTIGATIONS**

**Rural Credit, Insurance and Communication.** Investigations are now hope of suggesting possible improvements.

A great deal of survey work in relation to the subjects mentioned has been done during the past year. This work has made apparent the importance of further investigations, especially of the problems involved in the use and abuse of store and machinery credit and financing and breeding, feeding, and marketing of live stock. In connection with the cooperative organization work of the Office, a general investigation is being made of the financing methods used by efficient purchasing, producing, and selling organizations among farmers. A short bulletin by Dr. T.
N. Carver, "How to Use Farm Credit", has been issued and presents certain elementary principles bearing on this subject.

Very little study thus far has been attempted in the field of rural insurance. It is important that definite conclusions be arrived at regarding the losses from various classes of risk in agriculture, the extent to which farmers are insured against losses, the facilities used for such insurance, and the items of cost.

As one of the means of improving rural communication, a study is projected of rural telephone companies in order to obtain information as to the best methods of organization, operation and control.

Rural Social and Educational Activities. Study of practicable methods for use by cooperative associations in improving conditions of education, health, recreation, household economy, and aesthetic taste in rural life has been undertaken. Information helpful in the adaptation of new agencies to the social needs of country communities will be supplied and an endeavor will be made to promote wholesome social interests among rural people through publications and expert field assistance.

A survey of a selected region in Chilton County, Alabama, conducted during the past year, reveals social needs in connection with all the subjects mentioned and suggests the importance of further study supplemented by careful attempts along demonstration lines.

The fact that the study of such subjects as sanitation and rural school systems and the suggestion of improvements is rightly the task of other Departments or Bureaus is recognized, but it is believed that there are very important ways in which organized activity among the farmers themselves may help to improve materially the present deplorable educational facilities in rural communities and to promote better health conditions. Women's organizations for the study of domestic economy and kindred subjects will be encouraged as it is thought they present great possibilities for helpful and constructive work, and efforts to improve recreation and aesthetic enjoyment in rural life will be encouraged wherever possible.

ENFORCEMENT OF THE UNITED STATES COTTON FUTURES ACT.

An Act to tax the privilege of dealing on exchanges, boards of trade, and similar places, in contracts of sale of cotton for future delivery and other purposes, was passed by Congress and approved under date of August 18, 1914. Through regulation of the form of contract it is believed that this legislation will render
possible the correction of certain abuses existing on the future exchanges while interfering with no legitimate transactions in any way. Contracts that comply with the law will be exempt from a two-cent tax.

Under this Act the Secretary of Agriculture is enabled to promulgate standards for determining the value of cotton which will after February 18th, 1915, be compulsory in all future trading. It provides also that the Secretary may hear disputes with reference to the grade, quality or length of staple of any cotton dealt in under the terms of the Act. It also authorizes him to denominate what shall be considered spot cotton markets and if necessary, actually to construct and publish commercial differences in order to keep the future markets in line with the true value of cotton.

For the conduct of this work and the investigations relating to it, Congress appropriated $150,000.

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**WORKMANSHIP AS A FACTOR IN MAKING GOOD BUTTER**

**BY CARL E. LEE**

Assistant Professor, Dairy Husbandry, University of Wisconsin

THE value of the Dairy Industry of the state or nation is based entirely on the total output. Within the butter producing states, the big problem has been one of keen competition for quantity. This has had its evil effects. It has resulted in lowering the degree of co-operation that should exist between the producer, manufacturer, and the dealer.

Workmanship as applied to butter is not a factor that lies entirely within the factory, or covers the period from the delivery of the product from the farm until the finished butter is loaded into the refrigerator car. If the farmers are permitted to deliver cream or milk that is tainted and has lost its original flavor, no skill or standard of workmanship at the hands of the butter maker can produce out of the product good butter. Therefore, in the future every milk and cream producer must be informed as to the best methods to be followed in caring for the raw material. He must understand that there is no market for the tainted product.

![Image](https://example.com/image.png)

**THE STRENGTH OF THE BRINE AND THE POROSITY OF THE BUTTER IS AN INDICATION OF THE AMOUNT OF DRY SALT THAT WILL APPEAR ON THE SURFACE OF EXPOSED BUTTER PLACED IN A DRY ROOM.**
In the middle west the one important topic at conventions or wherever creamery men meet is, how can we improve the quality of the cream produced on the farm. Cream grading has been mentioned as a possible solution. A large number of factory operators have concluded that the only remedy is to do away with a market for a tainted product. This will result in a higher standard of workmanship on the farm.

That the quality of the raw material bears a relation to the quality of the finished product is brought out by the fact that creamery men and producer.

FACTORY OPERATORS ARE TRAINED.

The men in charge of the creameries are as a rule well trained with reference to the handling of the milk and the cream so as to produce the best results. They have been taught that the churning of cream low in per cent of acid produces butter of higher keeping quality than the butter made from high acid cream.

It is also understood that, certain principals pertaining to the heating or pasteurizing of cream must be adhered to, that a starter unless properly made and containing the desired flavor and acid will do more harm than good. There are very few men that do not fully understand that the temperature at which cream must be churned is governed by locality, season, acidity of the cream and the length of time it is held at churning temperature. They realize that the main factors to be considered are those that influence the loss of fat in the buttermilk, and those that affect the firmness of the butter. Nevertheless at times the finished butter has shown that the condition influencing the grain, color, and the salt of butter has been over-looked or grossly neglected.

Wisconsin stations and others; namely, when men exhibit butter for the purpose of having it scored, the highest scoring butter is made from a clean flavored product. There are men that make high quality butter when cream only is received, but none of this cream is tainted. The diagram made up from data obtained from the handling yearly of some 800 lots of butter by the scoring exhibitions conducted by the Wisconsin Experiment Station shows that when the milk is skimmed on the farm the factory operators cannot place upon the market a product equal to that made by the men in charge of factories receiving whole milk. The progress each year has been due in part to a better cooperation...
Marked Improvement in Recent Years.

There has been a marked improvement in recent years in the body, color, and condition of the salt found not only in the exhibition and convention butter, but in the product shipped to the market. The improvement has come because the governing factors have been more fully understood by the creamery men, instructors, and the writers for the dairy press.

It cannot be said that the factory operator is always responsible for the flavor found in butter, but if the factory is properly equipped he is directly responsible for the body, color, salt and the appearance of the package.

When the body of the butter is not perfect it has been injured by improper handling of the cream prior to churning, by not regulating the temperature of the wash water, by an improper method of washing or working, or the butter has been softened.
or over heated in transit. A defective body will have a lowering effect on the flavor besides making the color dead and at times wavy.

The color and salt are always under the maker's control. Whether it shall be high or low, will depend upon the demand of the market or the consumer. There is always a market for butter regardless of its color, providing the shade is uniform, and for butter of all degrees of saltiness, if in opening caused by the breaking, small droplets of clear brine will be visible.

In Wisconsin during the year May, 1909, to April, 1910, some 34.19 per cent of the butter entered at the scoring exhibition was defective in body. For the months May to October of that year 59.2 per cent was cut in score for imperfect body. For the month of September 73.1 per cent of the butter was not perfect in body. In July, 1909, 59.4 per cent

![Image of butter samples](image)

**THE EFFECT OF WORKING UPON UNIFORM COLOR.** UPPER ROW WASHED AND LOWER ROW UNWASHED BUTTER WORKED 8, 16, AND 24 REVOLUTIONS IN A SINGLE ROLL CHURN

the high salted butter, the salt is uniformly incorporated, and nearly all dissolved.

**THE BODY OR GRAIN IN BUTTER.**

Nothing is more desirable in butter than a body that presents life and firmness. Butter that pulls well on the trier, with not too much visible brine, yet a sufficient amount so that a broken edge will present a surface that is irregular and between each was cut in score on body, while one year later only 8.5 per cent. This difference can in part be explained by the method followed in handling the churn. In July, 1909, 26.8 per cent of the men that reported how the butter was made, worked it in the wash water prior to salting; 87 per cent of the butter was either criticized or cut in score on body. In July one year later when only 8.5 per cent of the butter was cut in score on body,
only 7 per cent of it had been worked in the wash water from 2 to 8 revolutions. The exhibit worked the highest number of revolutions in the wash water received the greatest cut in score on body.

When the firmness of the butter prior to working is regulated by the temperature of the cream when it is churned, or by the temperature of the wash water, it can always be worked the required number of revolutions to make the body compact and smooth, with a perfect grain and with the salt uniformly distributed. If the butter is worked prior to salting, it will produce the same effect on the body as the working after salting, consequently the working that is necessary to distribute the salt uniformly in butter worked prior to salting, injures the grain and makes the color lighter or what is occasionally called "dead."

**THE COLOR OF BUTTER EASILY CONTROLLED.**

The color of butter is under the control of the maker. It matters not whether the shade be high or low, in either case it must be uniform. With the improvement in the texture, it is natural that the defects in color, such as mottles or waviness should be reduced. The uniform color through-out a churning is primarily dependent upon the even distribution of the component parts of butter, especially salt. The massing of the butter before salting; washing of soft butter; revolving the churn on slow gear while washing the butter; working in the wash water or working the butter after washing before the salt is added, has been rendered less favorable for the uniform incorporation of the salt. The factors above mentioned have been laid before the creamery men through the dairy press. This has naturally been the result. In one year of exhibition work the per cent of butter defective in color was reduced from 28.2 per cent to 8.2 per cent.

A large per cent of the butter on the market that is found to be defective in color is not mottled because of the uneven distribution of the salt, but on account of the excessive working of a portion of the butter. The salt in a churning of butter may be distributed uniformly but if one portion is worked more than another, the color cannot be uniform because working tends to reduce the color.

A commission firm may state that the butter is mottled indicating uneven distribution of salt, when the term used should be wavy.

Men interested in butter as a maker,

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**AVERAGE SCORE OF EXHIBITION BUTTER FOR A PERIOD OF FIVE YEARS ACCORDING TO THE KIND OF RAW MATERIAL USED. THE HEIGHT OF EACH SECTION INDICATES THE AVERAGE SCORE**

![Average Score Chart](image-url)
dealer, or official judge, should be able to designate whether the defective color is due to

1. The uneven distribution of the salt.
2. Excessive or uneven working of the butter.
3. Uneven packing of the butter when filling the tubs or boxes to be later made in one-pound prints.

A TUB OF BUTTER READY FOR MARKET

4. The overheating of the butter while in transit from the factory to the market.

PROPER SALTING IMPORTANT.

It is very important that butter be uniformly salted from day to day, because the commission men prefer to supply one locality with the output of one factory.

If the demand is for light salted butter, it must be so made. Since the question of competition in factory operation has been increased and a limit is placed on the per cent of water incorporated, there has been a tendency on the part of a few to increase the salt in butter, thus reducing the per cent of fat and increasing the per cent of overrun. The public in general demands a salt content sufficiently high to be noticeable as soon as tested—or 2 to 2½ per cent.

The addition of salt does not cover up defects in flavor to any great extent. It is not feasible to salt high because tainted raw material is received.

Salt increases the color of butter up to complete saturation of the brine. It also changes the distribution of the water by reducing the number of droplets present in a given area of butter.

Salt imparts life and the sparkling effect that is noticeable on the exposed surfaces of broken butter. It does not, however, change the per cent of water in butter unless no free water is present in the churn during working.

If butter is soft and rather open in texture when the salt is added, it will have a tendency to make butter appear leaky. Hence, when the butter has set, the brine is freely discharged. This is further illustrated by salting the butter in one end of a churn high and the opposite end low. If the butter is naturally close grained, increasing the salt content does not make it leaky, but if the butter is soft and slushy it will be leaky.

THE APPEARANCE OF THE PACKAGE VERY IMPORTANT.

The appearance of the package of butter whether in tubs, boxes, or prints is a great factor in selling. This does not require skill but the observance of common neatness.

A TUB OF BUTTER READY FOR MARKET

HERALD COFFIN
M ANY of our dairy authorities are so accustomed to think of cheese as meaning the New York State brand Cheddar that they have forgotten that it is but one of very many kinds, some of them more widely known to the world. We therefore find legislative definitions drawn to shown that cheese should mean this single variety. If these people were transported to France or Germany they could hardly find their ideal (or is it an idol). Even in England, the home of cheddar, this is but one of many forms of cheese-making. In America the term "fancy cheese" has been variously used, frequently to cover everything but the standard factory cheddar. Latterly Swiss, Limburger, Brick, and perhaps others, in some localities have become common enough to be excluded from the "fancy" group.

With the great amount of capital invested in dairy work in New York State, every profitable line of dairy manufactures which can be developed offers another outlet to the product. If cheese making is to contribute to the prosperity of a permanent agriculture, our cheesemakers must meet changing demands, adapt themselves to new processes and develop markets which have as yet been scarcely touched. The man who learns but one process and fails to bring that to a high degree of perfection may run his factory for a time but sooner or later maker and factory will be pushed out of business. This has already happened in numerous sections of New York as well as in other States. In contrast the conspicuous success of certain factories which have become great is the reward of skill and resourcefulness, first, in making special kinds of cheese, second, in getting their product into the hands of appreciative consumers in proper condition. So great have been these successes in fancy cheese lines that the specialties of these factories are standard throughout the eastern half of the United States. These factories are so distributed over New York State as to dispose effectually of any claim that
they have been favored by local situations. Their success is clearly the reward of work well done. Their selling operations have been mostly confined to the large cities. Only small amounts of the fancy cheeses are regularly handled at present outside cities of considerable size. Even when attempts have been made to sell them in small places, losses have usually discouraged continuance. Dealers and consumers alike have lacked knowledge, both of what standards for these cheeses should be and how they should be handled. The quality of the goods which reaches the consumer in the smaller community at present defeats any attempt to increase the trade. Even in Washington we rarely get cream, Neufchatel, or Camembert in really fine condition. The problem affects producer, dealer and consumer. It is one of education in which we are entitled to look for leadership to the college. Most of us who grew up outside the large cities knew no cheeses except cheddar. 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fully against the condensery, the butter factory, or even the milk dealer. It further means that very large amounts of cheese go directly from the factory to the local market. In discussing the situation in Germany some years ago with the writer, Professor Fleischmann said that the larger part of the varietal names found in Germany were merely factory brands and nearly, or entirely, unknown beyond the towns in the immediate vicinity. Obviously such Swiss and Limburger, are dominant in whole areas with large output. Whole chains of Limburger factories with an expert supervising maker are operated in the northwestern counties. More or less of the same situation applies to Swiss. No Limburger is imported to compete with the domestic, whereas our domestic Swiss has never been produced in such uniform high quality as to compete successfully with the imported. In the case of Limburger the adjustment of manu-

factories are a vital factor in the prosperity of their communities. No such condition obtains here. Local consumption has been negligible in the regions of production. The methods of work have frequently been concealed for fear of diffusion and the products have been scarcely known in nearby towns. New York State supports at present rather flourishing industries producing the following varieties of cheese, outside the cheddar group: Swiss, Limburger, Brick, Münster, Cream, Neufchatel, Cottage, skim-milk Neufchatel, d'Isigny (also called Brie when made in certain sizes.) Some of these, as CAMEMBERT CHEESE IN DIFFERENT STAGES OF MANUFACTURE
Agriculture has been working upon Swiss problems for several years, latterly with some success.

Another group, brick, Münster, d’Isigny, are produced in isolated factories or in groups of factories in various parts of the State. Münster is occasionally imported upon a small scale. Brick and d’Isigny (better drop the d’ for it never came from Isigny, France), are domesticated processes in which there is no competition in imported cheese. The three are related in odor, taste and manufacture; they are also related to Limburger in the matter of odor and taste. These more or less bridge the gap from the hard to the soft cheeses. For each of them there is a demand and a place among the diversified food products used in our great cities.

The Soft Cheeses: In the typical soft cheeses, New York dominates the Eastern market. Half a dozen manufacturers of the Neufchatel group of cheeses practically divide that part of the trade. These are the cheeses with sour milk flavor. They vary from square cream, which commonly is made from milk to which fat has been added until it tests 7 per cent or more, to skimmed Neufchatel. The cream cheeses contain from 35 to 50 per cent fat and 37 to 50 per cent water. They vary in quality greatly. Deterioration is very rapid and begins quickly in those with water content rising toward 50 per cent. Good cream cheese should fall close to 40 per cent in water but the temptation to obtain a high yield by insufficient pressing brings a very large percentage of poor stuff into the field. If sold and eaten quickly such cheese passes undetected; if kept a few days it offends the discriminating customer. Similarly with Neufchatel, a good cheese will fall close to 50 per cent water and 20 to 30 per cent fat. If nice and fresh it will be attractive at 60 per cent, but will go “off” in flavor quickly. As the milk is progressively skimmed, the Neufchatel process produces cheeses rising toward the 75 per cent of water and falling to the fat-free basis of the old time cottage cheese. The range of quality between the extremes is very great. At present the large volume of production falls into two groups—the moderately good cream cheeses and the same grades of Neufchatel. The number of really high grade brands is small. The opportunity in these cheeses lies in the production of special brands of uniform quality for definitely known and discriminating trade. As noted already, outside the immediate clientage of the distributing houses in the large cities, few of these cheeses reach the consumer in really attractive condition. Many of them are offensive. The city of Washington gets practically none of these cheeses at their best. This is true of many other places. The cheeses of this group are easily produced with moderate expense for equipment, and the opportunities to build up local trade for known products produced nearby have not been tested in this country. Enough has been done by the Dairy Department at Ithaca to show that the market for such products can be almost indefinitely extended.

Camembert. Of the high priced French cheeses Camembert has been most fully studied. The necessity of special equipment to control temperature and moisture, handicaps the American factory. But the ability to send a fully ripe cheese to a market only a few hours away is a tremendous advantage in dealing with so perishable a product as ripe Camembert. With the opportunity due to restricted importation just now, these factories operating should bring their technique to such perfection as to hold their share of the trade at the end of the war. Unless such care and skill is developed, they can not hope to compete when high class French cheese is again available to satisfy the market.

Specialties. A third group of cheeses falling to my assignment may be called specialties. Two firms in
your state turn out qualities of processed cheddar which have recognition over wide areas. Both of these products are skilfully handled. One factory has gradually narrowed its business to a single article under a trade name but that cheese may be seen on nearly every large cheese counter from Chicago to Boston. The incorporation of pimento, olives, nuts, and other condiments furnishes a long list of modifications of cream and Neufchatel. The desire of the citizen of foreign birth for national products of his home country has been met by certain firms in the production of provolone, caciocavallo, whey cheeses, and the various forms of “Kosher”. The chance for multiplication of these products is indicated by the study of the list of nearly 500 varieties published by Doane and Lawson (U. S. Dept. Agr. B. A. I. Bul. 105 and 146) some years ago. Many of these are purely local forms, but they have a legitimate place in the dairy industry wherever manufactured. Multiplication of products in this way, in so far as each product represents the skillful production of something which satisfies a special, even a restricted market, is desirable.

The alternatives before the cheese maker then are (1) the production of a standardized article which can be dumped wholesale into the general market and find its outlet through the regular channels, or (2) the production of a high class article which must be skilfully handled for the special or local market. The former represents the conservative practice usual in America. The latter is a large and in many ways attractive opportunity.

THE NEW MILK ORDINANCE

BY T. J. McINERNEY

Instructor Dairy Department, New York State College of Agriculture at Cornell University

THE purpose of this milk ordinance is an endeavor on the part of the State Department of Health to control communicable diseases in so far as they are transmitted by milk. It is a well known fact that typhoid fever, scarlet fever, diphtheria, tuberculosis and other contagious diseases may be carried by milk and if the germs which cause these diseases gain access to the milk they find there a favorable place in which they can develop.

One of the chief advantages of milk inspection is the fact that the Board of Health knows who are selling milk and the dairy farms on which that milk is produced.

According to the new milk ordinance all milk dealers must make application to the health officer for a permit to sell milk and this permit must be sworn to by the applicant. The applicant must file the list of dairies from which he receives his milk and the approximate amount of milk produced by each dairy. If a contagious disease breaks out in a community the health officer can find out if these cases are on the route of a single milk man and if so he can trace the disease back to the dairies by finding out whether or not there has been sickness at any of the farms on which this milk has been produced. This has been done in several cases in the past.

On or before January 1st, 1915, the premises of all persons who are to handle milk or cream for the supply of any city or village must be inspected and be passed upon by the local health officer or his representative. The milk produced on such premises will there be graded according to the sanitary conditions of the dairy, the health of the animals and the bacterial content of the milk pro-


### REQUIREMENTS FOR GRADES OF RAW MILK.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Cows</th>
<th>Bacterial Requirements</th>
<th>Dairy Score</th>
<th>Time allowed for delivery</th>
<th>Method of labeling and selling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified</td>
<td>Tuberculin tested and, in</td>
<td>Free from pathogenic</td>
<td>Determined by the</td>
<td>Determined by the medical</td>
<td>Marked with the label of the</td>
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<tr>
<td>Milk</td>
<td>good physical condition.</td>
<td>bacteria or bacteria</td>
<td>medical milk</td>
<td>medical milk commission.</td>
<td>medical milk commission</td>
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<tr>
<td>Grade A Raw</td>
<td>Tuberculin tested annually.</td>
<td>not more than 60,000</td>
<td>Not less than 25%</td>
<td>Within 36 hours from</td>
<td>Must be sold in containers</td>
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<tr>
<td></td>
<td></td>
<td>per cc. for milk; or</td>
<td>for equip. and</td>
<td>time of milk.</td>
<td>sealed at the dairy and tags</td>
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<td></td>
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<td>300,000 per cc. for</td>
<td>50% for methods.</td>
<td></td>
<td>must be white with &quot;Grade A</td>
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<tr>
<td></td>
<td></td>
<td>cream.</td>
<td></td>
<td></td>
<td>Raw&quot; in black type and name</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>and address of the dealer.</td>
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<tr>
<td>Grade B Raw</td>
<td>Pass annual physical</td>
<td>Milk not more than</td>
<td>Not less than 23%</td>
<td>Within 36 hours from</td>
<td>Caps and tags must be white</td>
</tr>
<tr>
<td></td>
<td>examination.</td>
<td>200,000 per cc; cream</td>
<td>for equip. and</td>
<td>time of milking.</td>
<td>and contain the term &quot;Grade B</td>
</tr>
<tr>
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<td></td>
<td>not more than 750,000</td>
<td>37% for methods.</td>
<td></td>
<td>Raw&quot; in green type and name</td>
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<td></td>
<td>per cc.</td>
<td></td>
<td></td>
<td>of the dealer.</td>
</tr>
<tr>
<td>Grade C Raw</td>
<td>No requirements.</td>
<td>No requirements.</td>
<td>Total score of at</td>
<td>Within 48 hours from</td>
<td>Caps and tags must be white</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>least 40%.</td>
<td>time of milking.</td>
<td>and contain the term &quot;Grade C</td>
</tr>
</tbody>
</table>

### REQUIREMENTS FOR GRADES OF PASTEURIZED MILK.

(Pasteurization is defined as the subjecting of the milk or cream to an average temperature of 145°F for at least 30 minutes.)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Cows</th>
<th>Bacterial requirements.</th>
<th>Dairy Score</th>
<th>Time allowed for delivery</th>
<th>Method of labeling and selling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade A</td>
<td>Must pass the annual</td>
<td>Not over 200,000</td>
<td>Not less than 25% for equip. and 43% for methods.</td>
<td>Within 36 hours after</td>
<td>Must be sold in containers</td>
</tr>
<tr>
<td>Pasteurized</td>
<td>physical examination.</td>
<td>bacteria per cc.</td>
<td></td>
<td>pasteurization.</td>
<td>sealed at the dairy and tags</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>must be white with &quot;Grade A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pasteurized&quot; in large black</td>
</tr>
<tr>
<td>Grade B</td>
<td>Must pass the annual</td>
<td>Not over 300,000</td>
<td>Not less than 20% for equip. and not less than 35% for methods.</td>
<td>Milk must be delivered within 36 hours after pasteurization and cream within 48 hours after pasteurization.</td>
<td></td>
</tr>
<tr>
<td>Pasteurized</td>
<td>physical examination.</td>
<td>per cc.</td>
<td></td>
<td></td>
<td>The caps or tags must be white and contain the term &quot;Grade B Pasteurized&quot; in large green type and name of dealer.</td>
</tr>
<tr>
<td>Grade C</td>
<td>No requirements.</td>
<td>No requirements.</td>
<td>Total score of at least 40%.</td>
<td>Within 48 hours after time of pasteurization.</td>
<td></td>
</tr>
<tr>
<td>Pasteurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The caps or tags must be white and contain the term &quot;Grade C Pasteurized&quot; in large red type.</td>
</tr>
</tbody>
</table>
duced on such dairies and whether or not the milk has been pasteurized. The grades of milk are as follows: "Certified Milk", "Grade A Raw", "Grade A Pasteurized", "Grade B Raw", "Grade B Pasteurized", "Grade C Raw", and "Grade C Pasteurized". Pasteurization in each case is defined as subjecting the milk or cream to an average temperature of 145°F for at least 30 minutes. After pasteurization, such milk or cream shall be immediately cooled and placed in clean containers and the containers shall be immediately sealed. No milk or cream shall be pasteurized more than once.

"Grade A Raw" is milk or cream produced from cows that have been healthy as disclosed by an annual physical examination and such milk or cream must not contain more than 200,000 bacteria per cubic centimeter before pasteurization, while the milk, after pasteurization must not contain more than 30,000 bacteria per cc. and the cream not more than 150,000 bacteria per cc. The dairies on which such milk or cream is produced must score at least 25% for equipment and not less than 43% for methods. Such

STATE SANITARY SUPERVISORS WHO RECENTLY VISITED THE UNIVERSITY TO RECEIVE INSTRUCTION IN REGARD TO THE NEW SANITARY MILK CODE

Certified milk is milk produced under a legal contract between a dairyman and a medical milk commission. The medical milk commission is a milk committee appointed by the county medical society. The medical milk commission must certify as to the health of the animals, the health of the milkers and attendants and the purity and cleanliness of the milk. "Grade A Raw" is milk or cream produced from cows that have been tuberculosis, the milk must not contain more than 60,000 bacteria per cc. and the cream not more than 300,000 bacteria per cc. and the dairies on which this milk or cream is produced must score at least 25% for equipment and 50% for methods on the official dairy score card. The milk or cream must be delivered within 36 hours from the time of milking in containers sealed at the dairy and the tags or caps must be white and contain the term "Grade A Raw" in large black type, and the name and address of the dealer.

"Grade A Pasteurized" is milk or cream produced from cows that are
milk or cream must be delivered not later than 36 hours after pasteurization in containers sealed at the dairy. The caps or tags must be white and contain the term "Grade A Pasteurized" in large black type.

"Grade B Raw" is milk or cream produced from healthy cows as indicated by the annual physical examination, and the milk must not contain more than 200,000 bacteria per cc. and such cream not more than 750,000 bacteria per cc. The farms on which such milk or cream is produced must score at least 23% for equipment and 37% for methods. Such milk or cream must be delivered within 36 hours after milking and the caps or tags must be white and contain the term "Grade B Raw" in large, bright green type and the name of the dealer.

"Grade B Pasteurized" is milk or cream produced from animals that have passed the annual physical examination and contains not more than 300,000 bacteria per cc. before pasteurization. Such milk, after pasteurization must not contain more than 100,000 bacteria per cubic centimeter and such cream not more than 500,000 bacteria per cc. The farms on which this milk or cream is produced must score at least 20% for equipment and 35% for methods. Such milk must be delivered within 36 hours and such cream within 48 hours after pasteurization. The caps or tags must be white and contain the term "Grade B Pasteurized" in large, bright green type and the name of the dealer.

"Grade C Raw" is milk or cream produced on farms that score at least 40% on the official score card and must be delivered within 48 hours from the time of milking. The caps or tags affixed to the containers must be white and contain the term "Grade C Raw" in large red type.

"Grade C Pasteurized" is milk or cream produced on farms that score not less than 40% on the official dairy score card. Such milk or cream must be delivered within 48 hours after the time of pasteurization and the caps or tags affixed to the containers must be white and contain the term "Grade C Pasteurized" in large red type.

One of the difficulties of this ordinance is that it may result in injustice to some of the producers. In order to get in "Grade A Raw" all cows producing such milk must be tuberculin tested. But the tuberculin test guards against only one of the many contagious diseases, as mentioned, that are carried by milk, namely Tuberculosis. A low bacteria count shows care in the handling of milk while a high bacteria count shows the possibilities of infection from other sources. To cite a concrete example I have in mind a man who is producing milk at all times of the year with a bacteria count averaging less than 5,000 per cc. and he has a dairy score of 27% on equipment and 53% on methods, and all his cows are in good health as indicated by the annual physical examination. But he must label his milk "Grade B Raw" because his herd is not tuberculin tested. Another case is that in which a man has a dairy score of 25% on equipment and 50% on methods, and his herd is tuberculin tested but his bacteria count averages 50,000 per cc. According to the new milk ordinance he can sell "Grade A Raw". Which is the better milk?

The success or failure of this ordinance depends to a great extent on the integrity of the dealer. An example would be when one dealer may sell several grades of milk on the same wagon. If his supply of "Grade A Milk" is short, he might substitute "Grade B Milk" for it, and unless a close watch is kept on all dealers by the inspector, such things may happen. The only way to do in such a case is to allow a man to sell but one grade of milk if he is once found to be violating the ordinance.

The probable results of this new ordinance will be the buying and selling of milk according to its quality as indicated by the grade. The milk inspectors who are to enforce this or-
THE RELATIVE VALUE OF FOODS FOR DAIRY COWS

BY ELMER S. SAVAGE

Professor of Animal Husbandry, New York State College of Agriculture at Cornell University

The question of uniform feeding standards and true relative values for feeds for all classes of live stock is an interesting and important question. Teachers in Animal Husbandry are not teaching in the same terms and are not using the same standards. Consequently the literature is in more or less chaotic condition. There is a great need of bringing these different sets of ideas together into a complete up-to-date set of feeding standards which will be used in standard texts and taught by all teachers. The feeding standards now in use are either incomplete or so old that in many respects they are known to be inaccurate.

In this short paper nothing new can be added. It is simply an attempt to call attention to the wide discrepancies in the feeding standards as they exist with a plea for unification on the basis of the knowledge that is already in the literature on feeding with the hope that subsequent investigation may confirm such a unification. The discussion will be confined to the standards for feeding dairy cattle.

First of all it is interesting to compare the different feeding standards that are now being held up as a guide to students to show the amount of food necessary for a cow. Seven different standards are being taught, the Armsby, Kellner, Eckles, Scandinavian Feed Unit System, Wolff-Lehmann, Haecker, and Cornell standards. Perhaps it is not quite fair to call these standards all different. The Eckles standard for milking cows is a slight modification of Armsby's, really a checking up of the Armsby suggestions for milking cows. The Cornell standard is simply a modification of the Haecker standard as applied to milking cows.

Below is given a table in which these standards are all compared. The amount of nourishment is the amount suggested by the different standards for twenty-four hours for a cow weighing 1000 pounds and yielding in the twenty-four hours 22 pounds of milk testing 4% of butter fat. All standards have been reduced to their carbohydrate equivalent by multiplying the digestible fat by 2.4 and adding the digestible carbohydrates and digestible protein. This carbohydrate equivalent has been changed to therms by multiplying the pounds of carbohydrate equivalent by 1,071 Calories and dividing by 1000. This reduces the production value of the necessary amount of nutrients to the term used by Armsby in his standards for dairy cows.

The striking thing about this table is the close agreement in the amount of food necessary as proposed by Armsby, Kellner, Eckles and the Scandinavian Feed Unit System. The Armsby, Kellner, and Feed Unit System standards have been worked out inde-
pendently, the Feed Unit System in a
totally different way of experimenta-
tion, and yet close agreement is seen.

FEEDING STANDARDS FOR DAIRY COWS

Weight 1,000 lbs. Daily Production 22 lbs.
of milk 4% Fat

<table>
<thead>
<tr>
<th>Protein</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Thems</td>
</tr>
<tr>
<td>Wolff-Lehmann</td>
<td>2.5</td>
</tr>
<tr>
<td>Haecker</td>
<td>1.886</td>
</tr>
<tr>
<td>Cornell</td>
<td>2.126</td>
</tr>
<tr>
<td>Armsby</td>
<td>1.600</td>
</tr>
<tr>
<td>Kellner</td>
<td>2.000</td>
</tr>
<tr>
<td>Eckles</td>
<td>1.71</td>
</tr>
<tr>
<td>Scandinavian Feed Unit</td>
<td>1.65</td>
</tr>
</tbody>
</table>

There is a close agreement between the Haecker and Cornell requirements of total food as measured by total production value in therms in the food supplied. The Wolff-Lehmann standard, the oldest of all, requires a still larger amount of productive energy in the food supplied.

The question now uppermost in the mind of the writer is, "Which standard shall I adopt in my teaching?" Does the Armsby standard supply enough food? Does the Cornell standard call for more food than is necessary so that feeding would be wasteful with this standard as a guide?

Two points in the way of constructive criticism may be made. Since there is such close agreement in the Armsby, Kellner, and Feed Unit Systems, and with Eckles in his check work on the Armsby standard, it would seem that here is a good foundation on which to start to get a good practical working standard to be taught and worked upon until modified in the light of good practical working results. Secondly, these standards have so much good solid work back of them that it seems that some one of them should be chosen for the basis of a well conducted long time test with a large number of animals in order to check up its practical applications. It is very difficult to teach the practical feeding of animals until more careful experimental work is done on the application of feeding standards.

THE RELATIVE VALUE OF FOODS.

One of the most important things which a feeder must do is to choose his foods properly and intelligently with a sense of their relative values. Most feeders make their choice on the basis of their past experience.

As a teacher of many young feeders who have had no past experience to guide them, the writer has found it hard to find a method for stating the true relative values of feeds so that a farmer can tell whether it is cheaper to buy gluten feed at thirty-three dollars per ton or distillers grains at thirty-five dollars. Here again the literature is rather inconsistent, different relative values being given to foods by investigators.

Below are given the relative values of some of the common foods with corn rated as 100%.

RELATIVE VALUES OF FOODS FOR DAIRY CATTLE, CORN AS 100%.

| Alfalfa   | 14 | 13 | 19 |
| Red Clover | 18 | 13 | 21 |
| Corn Silage | 19 | 13 | 20 |
| Alfalfa Hay | 39 | 40 | 61 |
| Red Clover Hay | 39 | 40 | 58 |
| Mangel | 5 | 10 | 8 |
| Corn | 100 | 100 | 100 |
| Barley | 91 | 100 | 92 |
| Oats | 75 | 91 | 80 |
| Cottonseed Meal | 95 | 125 | 96 |
| Oil Meal | 89 | 111 | 90 |
| Dried Distillers Grains | 89 | 100 | 105 |
| Gluten Feed | 89 | 100 | 96 |
| Wheat Bran | 54 | 92 | 71 |
There is a close agreement between the total nutriment values and the Armsby values among the concentrates with the exception of wheat bran and distillers dried grains when the total nutriment value is higher. This is probably due to the large amount of fiber in the bran and the large amount of fat in the distillers grains which increases the total nutriment value so fast when the fat is multiplied by 2⅔.

The point of great difference lies in the relative values given to roughage as between the Armsby values and the total nutriment values. The total nutriment values for roughage are without much doubt too high. Another point of difference lies in the fact that according to the Scandinavian Feed Unit System the values of cottonseed meal and oil meal are said to be greater than corn, a point where there is evidence to criticize in a well balanced ration.

It seems to the writer that the relative production values of all foods should be computed as accurately as possible in terms of their productive values to make milk and butter fat. In the second table only a few foods have been compared to show how the relative values run as compared with corn in the different systems. Dr. Armsby's tables are not complete enough to give a good teaching basis but they seem to give the most accurate relative values and it would seem to the writer that if complete tables could be compiled according to the Armsby method covering the range of foods commonly used for feeding dairy cattle that they would be very valuable as a basis for computing relative values in the choice of foods for a ration. Without much doubt these production values as computed by Dr. Armsby from his own and Kellner's work are more accurate than the old total nutriment values. It is to be hoped that complete tables of these values will soon be available.

When these tables are available the teaching of practical feeding will be much simplified if the values are found to apply to the best practice. A farmer can very easily compute in which foods he can buy productive energy (therms) the cheapest. Then with simple standards written in the same terms the formulation of a ration will resolve into simply furnishing a variety of suitable foods from among those which will yield productive energy the cheapest. Then enough food must be fed to provide the amount of productive energy (therms) stated in the standard and in this variety of foods there must be sufficient protein to meet the minimum bodily needs of the animal each day.

The importance of the whole question and the need for careful experimentation to check up these applied values is emphasized by a consideration of the size of the feed business. In Indiana the inspection system in use enables the Experiment Station to know very close to the actual totals of foods sold to farmers each year. In 1913 the total foods sold amounted to $6,466,645.63. Of the amount, the total poultry foods amounted to $1,079,847.82, leaving as the amount paid for foods for cattle, horses, etc., which were inspected under the Food Law, $5,386,797.81. Of this amount 12.2% or $548,156.22 was paid by farmers for compounded or proprietary foods.

There is reason to believe that the amount of money paid by New York farmers for foods for their animals is even greater than this. This illustrates the great need for a simple method to use in calculating the relative values of foods and for combining them in efficient rations for our animals.
The adoption or adaptation of dairy products as basic necessities of modern cookery marks one of the most vital points in culinary development. A dietary which does not contain them seems preposterous to our present ideas. Butter and cheese, and their common mother, milk, are delightful to contemplate from two distinct standards. They serve not only as satisfactory and even essential articles in the human diet, with their high nutritive value, their adaptable natures, and general acceptability, but they, more than any other form of food material, also serve to feed that most fickle human attribute, the imagination.

In ancient days, when our ancestors were forced to adapt all their cookery to the idiosyncracies of a single iron pot swung over the open fire, such gastronomic joys as omelettes and cakes, pastry and custards, were as totally foreign to their diet as were our modern refinements to their uncouth style of living. Advancing civilization has brought in its train a general revision of culinary as well as social ideals, and the housewife of successive ages has come to recognize more and more eagerly the qualities in cream, butter and cheese that make them not only available, but ornamental adjuncts to her table, satisfying the cravings of the inner man, and tickling the tinsel side of his palate as well.

It is George Eliot, is it not, who likens the lump of butter, in its shining firmness, to a block of yellow marble. In her opinion the old-time dairy, with its fresh fragrance of new-pressed cheese, the soft coloring of its red crockery and polished tin, its bunches of green leaves enfolding the cakes of butter, and its wooden vessels perpetually bathed in pure water, was a thing to sicken for in hot and dusty streets; and while our modern science snaps metaphorical fingers at such unhygienic measures as dock leaves and wooden bowls, a model dairy is still a pleasant spot to see, and the shining cake of fresh-made butter is still the king of inanimate produce. Being high in fat content, or energy-building material, it fills an important need of our human system, and the crisp golden flakes are literally "pretty enough to eat."

In contra-distinction to our butter, which need only be seen to be appreciated, is the second product of our milk supply, the cheese. The block of Cheddar cheese seems to have no definite function to fulfill in the world. It is neither fish, flesh, fowl nor good red herring, and in this guise none but the most ardent admirers of its pungent taste will care to devour it in any quantity. Here the individual genius of the housewife is called into play. She knows that her cheese is a valuable article of diet, that it is comparatively cheap, and may be offered as a fair substitute for meat, provided the fraud can be tactfully concealed from the household. So with saucepans and graters and feminine wiles she converts the original yellow block into a multitude of appetizing dishes, in which the cheese is merged, like Mr. Jellyby, in the more shining qualities of its companions.

Milk, either in its natural state or in combination with other ingredients, is at once the most necessary and undesirable, the most courted and avoided, the most healthful and
injurious of any food material. It has been said that the milk problem, one of the most important and intricate of modern hygiene, begins at the cradle and ends with the grave. Some times it leads to an untimely grave. Since it contains, in more or less abundance, all the foodstuffs necessary for our development, and offers them in such a convenient and appetizing form, we of the Western world have grown to consider it a necessity of human nutrition. But touching elbows with these manifold fascinations lurk a score of invidious characteristics which have made the question of milk supply a subtle and harassing one. Modern science has done so much for us, however, in simplifying this problem and abrogating its dangers, that the housewife of today has at her fingertips a thousand and one safe and sane methods of introducing this prime product of the dairy into the life history of her family, so long as she recognizes the hygienic rules which provide against its dangers and deterioration.

These are, of course, but general rules, which may frequently be proved by their exceptions. No matter how skilful the cook, or scientific the recipe, failures are apt to occur now and then for which no apparent cause can be given. In its whimsical variations of moods, milk has no superior in the animal kingdom. Milk will sour, it will curdle, it will absorb the odor of the meanest onion of them all, and nine times out of ten milk will cling to the bottom of the saucepan and scorch, no matter how frantic may be your efforts to avert the catastrophe. These distinctive features, while often unpleasant in themselves, are really safeguards by which we are able to decide when the food is unfit for human consumption. Many of the "ills which flesh is heir to" are the legacy of carelessness, of injudicious experimentation, or of improper supervision of the milk supply, and the results are often dire.

Just how grave the results will be, and just what precaution would have averted them, is not always an easy matter to decide, since a complete knowledge of the various ways in which dairy products may be adapted to culinary pursuits has not been granted to us, even in this enlightened age. The nineteenth century made a great step forward when it ferreted out the underlying principles of their deterioration. It is now a matter of general note that the decay of many food materials is due to the action of micro-organisms, which literally prey on the food material, involving certain chemical changes which render it unfit for use, and the modern housewife finds her path continually beset by myriads of miniature goblin-forms, more grotesque, and far more formidable, than those which danced about Barnaby Rudge, in his phantom-haunted dreams. Infinite care and vigilance must be exercised to keep these tiny bacterial pests in check. Half of cookery is the cleanliness thereof. Many failures are chargeable solely to neglect in this important detail. Milk bottles must be sterilized, butter jars must be kept sweet and cool, the refrigerator in which they are stored must be spotless as the utensils in which they are placed. If these precautions be not conformed with, the aspirant for culinary fame is apt to find upon her hands a rarebit that is rancid, a custard that is curdled, or a cake which is totally depraved.

In general, however, it is safe to say that since the use of dairy products in cookery is really a scientific process, a scientific accuracy in combining and adapting them will lead to uniformly satisfactory and attractive results; and the housewife who keeps her store of provisions in trim order, row by row on the refrigerator shelves, may peep into this twentieth century treasure-house with a purer pride in possession and glory in future achievement than that of any antique, Oriental princess in her store of richest jewels.
BOYS' AND GIRLS' CONTEST CLUBS

There are certain dangers in Agricultural Contests which should be avoided

BY DR. L. H. BAILEY

(NOTE—Dr. Bailey gave this talk before a meeting of the Grange at Ithaca)

AMONG the many enterprises that are now being undertaken for the betterment of country life and agriculture, boys' and girls' clubs are holding much public attention. These clubs are in the nature of organized contests, with emoluments, prizes or public recognition standing as rewards. Contests may lie in the growing of prize crops, in the feeding of animals, in the making of gardens, in the organizing of prize-winning canning-clubs, bread-clubs and others. The organization of these clubs in recent years has undoubtedly constituted a distinct contribution toward the stimulation of interest in rural affairs and the development of pride and incentive on the part of many of the country people.

SEES DANGER IN CLUBS.

I have watched their growth with much interest and have had something to do in giving them encouragement and facilities. However, I see several dangers in this kind of work, and therefore I desire to offer some suggestions of warning, while at the same time reaffirming my approval of the general idea of organizing boys and girls for mutual emulation and improvement. We are now coming to a new era in our agricultural work, consequent on the passage by Congress of the great extension bill and the beginning of the organization of many kinds of rural betterment enterprises on a national basis. It is time, therefore, that we challenge all our old practices and make plans in a new way.

I see considerable dangers in the boys' and girls' club work, as some of it is undertaken at the present time or into which it may drift in the future. Perhaps there are other dangers, but four will be sufficient for discussion at the moment.

(1). These clubs or contests may not represent real effort on the part of the child. Work that is credited to the child may be done by father, mother, brother, sister or by associates. Probably in many cases the child's responsibility is only nominal. The boy or girl may receive credit for accomplishments that are not his or hers and that therefore are not real; and if they are not genuine, then of course they are dishonest. They start the child on a wrong basis and on false pretenses. All such work should be under careful and continuous control.

(2). The rewards may be out of all proportion to the effort expended. The prize should have relation to the value of the effort or the earning-power of the work, or it is likely to be damaging to the child and to arouse opposition in his community or among his associates. Rewards in agriculture have not come easily, and this has been one of the merits of the occupation in the training of the race, and it is one of the reasons why agriculture is a strong and important national asset.

When we make the rewards too easy, we not only cheapen the effort, but we lose the training value of the work. We must be careful that we do not let the rewards in agriculture come more cheaply or more easily than in other occupations. The person must work for what he gets and really earn it, or else the occupation will lose in dignity and standing with
the people. Agriculture should not accept gratuities.

Some time ago a young woman came to my office to secure a subscription, saying that if she accomplished a certain number of hundred, she would win a scholarship. She was willing to expend weeks of very hard work, to go to much inconvenience for the purpose of earning the scholarship. About the same time, certain young boys were brought to my office as one stage in a trip that was being given for relatively unim-

illustrates the dangers that are likely to accrue unconsciously to the child. It is a doubtful undertaking to single out certain children in a community for unusual recognition or reward.

(4). The children are liable to be exploited, and this is one of the most apparent dangers in the whole situation. They are likely to be used in the making of political or other public reputation, or in accomplishing advertising and propaganda for institutions, organizations, publications, commercial concerns, and other en-

portant effort in an agricultural contest. I could not help feeling that the rewards of effort were unjustly distributed. The travel-prizes are specially likely to be out of keeping with the original effort expended by the child.

We should take every pains to let the children feel that the rewards in life come only with the expenditure of adequate effort.

(3). The effect of these contests may be to inflate the child and to give him undue and untruthful estimate of his own importance. A shrewd observer of a boy's prize excursion remarked that every boy after he got home should be punished; but another observer suggested that the boys in the neighborhood would probably prevent him from getting the bighead. I do not endorse these remarks, but it terprises, or to exploit the resources of the state or the agriculture of a region. Children should never be made the means of floating anybody's enterprise.

Every part of the "boom" and "boost" element must be taken out of this work, and all efforts to make a display or demonstration. Substantial enterprises may stand on their own feet, and the work with children may stand on its own feet and not be tied up to undertakings to which it does not belong.

THE SAFEGUARDS.

Recognizing the dangers that may come from the organization of boys' and girls' clubs, how can we so safeguard them in the new time that these dangers will be eliminated or at least reduced to the minimum? I
think that we can safeguard them if only we recognize the essential nature and function of such contests.

The fundamental consideration is that all this kind of work is educational. It is not primarily agricultural work, not undertaken directly to improve the farming of a region. The primary consideration is its effect on the child. If we cannot accept these propositions, then I should be in favor of giving up the boys’ and girls’ contests.

It is legitimate to use domestic animals and crops for the primary purpose of improving and advertising the agriculture of a region; but we must not use children this way. Animals and crops are agricultural products; children are not agricultural products.

If these positions are granted, we shall agree that this contest work between children must be put more and more into the hands of those who are trained in education and who carry the responsibility before the public for educational effort. I think that this kind of work should be a part of and home practices will be a regular part of the school day, incorporated inseverably with the program of education. We must hope for the time when there shall be no necessity for the separate organization of such clubs, the school having reached and stimulated the situation on every farm and in every home. It is sometimes said that the agricultural agents organize the contest work better than the teachers. Perhaps; but the work is essentially school work, nevertheless, and we should now be looking for results in the long future.
BOYS' AND GIRLS' CLUBS 303

We now have many agencies that may contribute to the betterment of rural affairs and conditions. We should encourage each of these agencies to do its best in its own field. Political organizations or agencies naturally take care of the ordinary political work; the highway organizations or agencies take care of the highway work; the public health agencies cover the sanitary inspection; the commercial agencies take care of the general business; the religious agencies naturally work in the religious field; the farm-bureau agencies cover the agricultural field; the educational agencies should cover the educational field. Each of these agencies should be ready and willing to work with all the other agencies, but each one should recognize that each of the others has its own function and should have the same privilege in its field that a given agency demands for itself.

I do not like the present tendency of many agricultural enterprises or groups to assume the sole leadership in the club and contest work for the young in the open country. While I would not like to tie the hands of the recognized agricultural representative (whatever he may represent) in such a way that he could not undertake useful pieces of work even in rather unusual or outlying fields when the necessity seems to require it, the same as I would not want to tie hard and fast the hands of any other person, nevertheless I think the philosophy of the situation is that this educational work is the proper function of the regularly organized educational agencies that carry the public obligation and that are supposed to be trained for it. So far as the technical agricultural officer or agent is able to help these agencies by means of suggestions, cooperation and contribution, it will of course be his privilege and his happiness to do so. The training of the young is the particular responsibility of the educational organization, outside the home, and in general I think that this organization should be given a free opportunity to handle it, and the responsibility should be placed upon it.

Supervisors and superintendents of schools, and teachers, will need the demonstration-practice and the subject-matter that the agricultural agent can give them; they will increasingly call on this agent; and herein will be another effective means of tying all rural work together on a basis of cooperation and co-action.

Speaking broadly, I am glad of what has been done by any and all of the special agricultural and other agencies in organizing the boys and girls. So far so good; but I am now looking forward rather than backward. As I said at the beginning, we are coming to a new time. We must now step away from all more or less exploitive, temporary, discontinuous and occasional work in the organizing of the boys and girls in their contests, while recognizing that it has been undertaken with the best of motives and has been carried with much self-devotion and success, and we must concede the work to be educational and begin to place it directly on an educational basis.

If it is said that the schools will not take up the work, then I am willing to wait. My prediction is that the schools will very soon undertake it. They are now taking it up in many places. The opportunity, and I think the obligation, is theirs. Enough new movements are now starting in the open country to occupy our time and to convince us that we are making progress. These new movements are good and will have far-reaching effect; we should now understand that we have time to be patient.
You all know, of course, about Farmers’ Week and what it offers. But you may not have heard that Wednesday, February 10th, of that week is to be given special prominence as Alumni Day. The tentative plans now under consideration include the following events: (1) The Sixth Annual Meeting of the Students’ Association of the College at 10:30 A.M. (room to be announced later.) The feature of this meeting, aside from important business and reports, will be a discussion on “The College and its Alumni,” by Dean Galloway, Ex-Dean Bailey, if possible, and several prominent alumni. (2) An open meeting at 2:30 in the afternoon under the auspices of the Association, to listen to a talk by the Hon. D. F. Houston, Secretary of Agriculture. Mr. Houston has expressed his willingness and desire to be with us if his duties permit. (3) An informal “get-together” reunion and light lunch later in the afternoon, to which all Alumni and Faculty Members are invited. This will be a splendid opportunity—if not the only one—for the Alumni to meet and really get acquainted with the new Dean of the College.

Detailed, eleventh hour information will be posted on the bulletin boards earlier in the week, or may be obtained by dropping a postal card to the undersigned.

If you have only half decided to attend Farmers’ Week, make it sure right now; if you cannot stay in Ithaca for the entire six days, plan to be there anyway on Wednesday. It will be your day. Don’t fail to make the most of it.

E. L. D. SEYMOUR, Secretary Students’ Ass’n,
Country Life Press, Garden City, N. Y.

We have an honor system in the College of Agriculture. It is one of the first things about which the freshman learns. Let us see that he does not forget about it. The honor system is only workable when it has a tradition behind it. Since the College has only had it in force for a few years, we can
hardly say there is a real tradition as yet. But this should not deter us from enforcing it as well as though it had been with us for years.

The faculty has gone more than half way in the matter and has placed all the examinations under the control of the student body. Can we not reciprocate by showing them that we are fit for the trust? No normal person will premeditate cribbing or cheating—this means that 99 out of 100 will not. The question is how to reach the hundredth man. The propaganda of the campaign so far has consisted only in speeches by the senior class members of the committee before the classes in which the freshmen and sophomores of the college are in the majority.

The one thing to make an honor system succeed is to keep it constantly before the eyes of the undergraduates. This is done in an unobtrusive way and yet effectively by putting a short notice on all exam papers, "This examination is taken under the Honor System."

Let us keep at this good work and finally make an honor system in the college that we can always be proud of, and which cannot be surpassed in any way.

An appropriation made a little over a year ago provided for the erection on the college campus of a model rural school building. An appropriation was also made for the remodeling of the old stock judging pavilion for the use of the Department of Farm Management. These changes involved an appropriation of $3,000 and $10,000 respectively. Owing to the very rapid changes in sentiment taking place in New York State in reference to rural schools and the growing interest in consolidated schools, it has been deemed inadvisable to erect on the campus a model rural district school building. Furthermore, the appropriation was not sufficiently large to warrant an attempt at putting up such a building. The old stock judging pavilion stands in the midst of the quadrangle of the College of Agriculture. The future development of this quadrangle along proper lines is important. It was believed that if the changes were made and the $10,000 spent on this building the structure would become a more or less permanent fixture in the quadrangle, which is undesirable. Therefore, in the budget submitted to the legislature these two items have been omitted and will be allowed to lapse. The stock judging pavilion can be used, it is believed, very satisfactorily for the next four or five years as a temporary home for some of the departments, but eventually should give place to the development of the quadrangle as a whole.

A number of the Agricultural senior class pictures which have been signed up for, are still in the COUNTRYMAN office. If they are called for at once, it will materially facilitate matters. The keys to the pictures are also ready for distribution to those who did not get them at the time when they received their pictures.
CAMPUS NOTES

The "Round-up Club"

The "Round-up Club" is the recognized students' organization of the Animal Husbandry Department. The club was organized March 25, 1907, at Prof. Wing's residence. It was then necessary to name the club. Various names were suggested and discussed but it was finally named the "Round-Up" which was suggested by Mrs. Wing and unanimously accepted.

While it was felt that such a club would serve many purposes, the object uppermost in mind at that time was to furnish conditions for the free exchange of ideas among the students, among the instructors, among students and instructors as well as among students, instructors and visitors who from time to time might be called to meet with us; or as it has been stated by Prof. Wing, "A place to discuss family matters."

The Club, as stated, is much like its prototype, The Lazy Club. It is in theory and fact an organizationless club; it has no officials other than the member of the students' executive committee, who represents it in all student affairs. There are no dues and in fact no permanent membership. You become a member each week that you sign the roll book, the only duty — except one — that you are expected to perform. The one duty that by common consent we all agree to perform is to respond when called upon to lead the meeting.

The plan of procedure for meetings is to choose a leader for the evening who outlines a discussion and after which questions are asked. The meetings are commonly lead by the students although from time to time we have an important speaker from among the faculty or from out of town. In this way we cover a wide variety of subjects of interest to Animal Husbandry men.

The Club meets every Monday night at 7:30 and up to the present has held 186 meetings. The total attendance to the present time has been a little over 3,800. The first hundred meetings averaged a little over twelve, while the last eighty-six have averaged a little over twenty-four.

Possibly no feature of the Club has been more attractive or instructive than the organization of the Students' Live Stock Show which is held during Farmers' Week of each year. This show gives the men a chance to show what they are made of as well as a chance to get practical work in the fitting and showing of animals, which would otherwise be almost impossible.

Thus it will be seen that from the increase in numbers who attend and the great value of the Students' Live Stock Show that the "Round-Up" is serving a well defined purpose among the Animal Husbandry Students.
Significant among the events which occur in the College of Agriculture was the annual fruit exhibit of the Department of Pomology, held Nov. 5-7. A great many varieties of fruits including many sub-tropical varieties were shown. The exhibit was well attended by the students and fruit growers of the neighboring regions.

Much interest was shown in the exhibit, since fruit had been sent from widely separated parts of the country. Among the states represented were New York, Colorado, Idaho, Montana, Washington, Utah, California, Ohio, Virginia, Florida, Connecticut, and Maryland. The work of arranging the exhibit, the unpacking, setting up of the plates and grading was done entirely by the students. A general plan of arranging the fruit according to states was followed. New York apples in every way compared favorably with those of the West and South. There were 60 varieties of apples and 20 of pears. D. K. Bell of Rochester as usual, furnished the largest number of pears.

One of the most instructive sections of the exhibit was a large collection of grapes from the Geneva Experiment Station. There were about 75 varieties in all, many of which grow naturally in warmer climates. Without doubt quite a number of these varieties will be found to be useful and will not only increase the profits of the vineyardists planting them but also will increase the length of the season for which they may be kept, since many of these new kinds can be kept in storage until mid-winter.

A fine exhibit of semi-tropical fruits was made by H. H. Hume of Florida. There were specimens of pomegranates, persimmons, oranges, grapefruit, lemons, avocados, and many others. Some had special interest because of their novelty. Many specimens of Florida fruit were also contributed by the Department of Agriculture, which has a station at Miami, Florida. The persimmon, Tamopan, can be successfully grown as far north as Southern Canada. In Northern New York where the climate is mild this would be a valuable addition to the garden.

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

The exhibit besides showing many
of the excellent old varieties, showed
a marked tendency toward the intro-
duction of new kinds which previ-
ously were supposed to be unable to
grow in this climate. This is signifi-
cant because it is certain that some of
these new varieties will be introduced.

The annual chrysanthe-
num exhibition
of the Department of
Floriculture on Sat-

evening, October 31st, was without
doubt the most successful ever held
THE CHRYSANTHEMUM SHOW

The annual chrys-
anthemum exhibition exhibition. Floriculture on Satur-
day afternoon and
tions and formal designs. This
material was prepared for exhibition
by the students, and aside from the
table decorations and formal designs
which were made by them, many
cut-flowers and potted-plants were
sent to the University by practical
growers and retail men.

Among those who contributed
chrysanthemums, roses and carnations
were the Pittsburgh Cut-Flower Co.,
Pittsburgh, Pa.; W. J. Palmer &
Son, Buffalo; W. F. Kasting and
Company of Buffalo, and the United
States Cut-Flower Co. of Elmira, N.

at the University. The greenhouses
and attached laboratories were
crowded throughout the exhibition,
and much admiration was expressed
for the excellence of the material
shown.

Two sections of the greenhouses
were filled with chrysanthemums grow-
ing in pots placed on benches. These
represented all types of blooms and
methods of culture. The majority of
varieties were at just the right degree
of maturity.

The laboratory and class-room were
decorated with southern smilax and
artificial pink roses and this space
was given over to an exhibition of
cut-blooms, potted-plants, table de-
Y. W. J. Palmer & Son also sent
several magnificent colonial bouquets.
A corsage bouquet of orchids, lilies
of the valley and gardiniias, was
especially admired. Penneck-Meehan
Co. of Philadelphia sent in addition
to chrysanthemums, roses and carna-
tions, an interesting collection of
miscellaneous flowers such as bou-
vardias, tritomas and similar plants.
The E. C. Ludwig Company of Pitts-
burg, Elmer D. Smith & Co. of
Adrian, Michigan, and the W. W.
Edgar Co. of Waverly, Mass., also
showed a fine collection of varieties
of chrysanthemums. Several of Mr.
Smith's seedlings were very promising.
Anton Schultheis of College Point,
N. Y., sent several varieties of chrysanthemums in pots and in addition, thirty varieties of ericas, cyclamen, gardenias solanums, ardesias, ficus, dracaenas and primulas. Messrs. Schultheis, Palmer and Ludwig have sons taking courses in the University.

The class in commercial floriculture made a collection of formal designs, such as galax wreaths decorated with roses and other flowers, Odd-Fellow's and Masonic emblems, a pillow, and a standing anchor. Among these exhibitors were W. W. Knudson, S. J. Raub, H. F. Smith, M. A. Cassidy, W. M. Palmer, W. Funk, J. B. Clark.

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**OUR CHAMPIONSHIP SOCCER TEAM**


The class in amateur floriculture decorated luncheon tables. These were planned to show designs such as could be easily arranged in the home. Each student was given a chance to work out his own plan and much individuality was shown in the arrangements.

**Some facts**

"When I consider the fact that until six months before I came to Cornell, I did not know that it was a co-educational institution. I am not surprised that a large number of the residents of New York State are not aware of it. But one could not spend

Continued on page 320.
FORMER STUDENT NOTES

Professor J. L. Stone

'74, B.S.Agr.—Professor John L. Stone was one of the first three men to graduate from the College of Agriculture. He was born in the year 1852 on a farm in the village of Waverly, Pa. He received his preliminary education in that place at Madison Academy. After his graduation from Cornell he returned to his home farm and was there engaged in general farming for a number of years previous to taking up his duties at this university. In 1876 he was married to Jennie D. Parker of Clarks Green, Pa., and he has a family of four girls.

While on his home farm he showed a special interest in stock breeding and was treasurer of the Lackawanna Breeders' Association, which handled Holstein and Jersey cattle and Shropshire sheep. He visited England and Holland in 1882 for the purpose of selecting Shropshire sheep and Holstein cattle. He also held the office of President of the Lackawanna Co. Agricultural Society and was a member of the Pennsylvania State Board of Agriculture and worked on the Farmers' Institute staff.

In 1897 he came to Cornell as assistant and from this position he was promoted in 1903 to an assistant professorship in Agronomy and in 1907 to his present position in the Department of Farm Practice.

While connected with Cornell he has been engaged to a considerable extent in extension work and has become widely known among the farmers throughout the state. Due to his active nature, and knowledge of his subject, he has proven to be an unusually helpful man to the College of Agriculture.

'91, B.S.A.; '92, M.S.A. Among the earlier graduates in Agriculture at Cornell University there are none who have become more widely known or who have led busier or more useful lives than Charles H. Royce. Born of sturdy New England parentage, who had been tillers of the soil from the time of their landing, sometime prior to 1631, it was natural that he should turn his attention to the study of sciences pertaining to agriculture.

During his college course "Charlie," as he was familiarly known, was regarded by his associates as a man of remarkably good judgment. His mature life has accentuated this characteristic.

Becoming interested in dairying during his college course, he was one of the first to take the Dairy Course at the University of Wisconsin, and since then his interest in dairy matters has been unflagging. His work in the "Ellerslie Dairy," owned by the Hon. L. P. Morton, and which he later put in the so-called certified list, is wellnigh pioneer. Specializing in Guernsey cattle, he is recognized today as one of the greatest authorities in America, and as manager of the magnificent estate "Waddington", the home of the Guernsey, he has free scope to exercise his wonderful talents as a breeder.
Not only has Mr. Royce been eminently successful as a man of affairs, but he has given unstintedly of his time for public betterment. As secretary of the Panhandle Agricultural Club he is doing great things for the development of broader and better agriculture in West Virginia, and as president of the Students' Association of the College of Agriculture at Cornell, he has taken a leading and forceful part in shaping the development of the agricultural work at his Alma Mater.

Mr. Royce was married in 1893 to Miss Nina Barney, a graduate of one of the New York State Normal Schools, who most ably supplements his work by organizing the farm women in her community in clubs for mutual improvement and home work. They have a splendid family of four children, three girls and one boy, and it is entirely unnessary to say that the son is anxiously waiting the completion of his high school course so that he can enter the College of Agriculture at Cornell.

Beside being a legal citizen of New York State and a tax payer in Tompkins County, Mr. Royce is a member of the New York State Grange, the Bedford Farmers Club, and a life member of the Fruit Growers' Association and the New York State Agricultural Society.

'01, W.C.—At a recent meeting of the Eastern Live Stock Sanitary Association Harry B. Winters of Albany was elected president. The next meeting of this association will be held at Wilmington, Delaware.

'05, Sp.—George T. Reid has a farm at Englishtown, N. J., where he is making a specialty of potatoes. He is also Master of the Grange at that town.

'05, W.C.P.—Gus. Walters, who was a member of the first winter Poultry Course Class, and who has for many years been in charge of extensive work in the Poultry Department of Johnston Stock and Farming Co., North Dakota, is assisting in instructing in the Winter Poultry Course this year at Cornell.

'06, M.S.A.—A. D. Taylor, who was an instructor in the Department of Landscape Art after graduation, first took up a position with the firm of W. H. Manning of Boston, Mass. He now has offices at 1900 Euclid Ave., Cleveland, Ohio and Paddock Building, Boston, Mass. He is at present engaged in the laying out of the grounds for the proposed Industrial and Agricultural Exposition to be held at Springfield, Mass., in 1915. This is to be a continual fair in which the U. S. Government has cooperated with the exposition authorities by establishing an agricultural and entomological laboratory on the grounds. The following is a paragraph from the Springfield paper:

"Mr. Taylor was first suggested by professors at the Massachusetts Agricultural College who have been interested in the project from the first. He was formerly associated with Warren H. Manning of Boston and at present is employed by the
city planning commission of Detroit, Mich., for the development of parks and boulevard plans. He has also been associated with many exposition and college planning boards.

'06-'08, B.S.A.—Miss Nellie Salton has been engaged in the Children's Garden work for the large steel companies of Pittsburgh. Since the war began this has been discontinued and Miss Salton is now teaching in the public schools of that city.

'08, B.S.A.—J. Vincent Jacoby is head poultryman in charge of 500 head of poultry on the 400 acre farm owned by the city of Cincinnati and maintained for the boys of the city's House of Refuge. His appointment was made after he had passed an examination under the new civil service law of the State of Ohio.

'08, B. S. A.—Vaughan Mclaughey, professor in the College of Hawaii, Honolulu, Hawaii, will make an extended trip on this continent during June, July and August of this year. He gives illustrated lectures of his travels and experiences in the remote and little-visited regions of the Pacific. During six weeks of his stay here he is engaged by the Chautauqua Institution, Chautauqua, N. Y. His itinerary will extend from San Francisco to New York.

'08, B. S. A.—A son, Curtis Andrew McKay, was born on August 21, to Mr. and Mrs. Andrew W. McKay. Mrs. McKay was Margaret Curtis, '09. Their address is now Orlando, Florida, where he is employed in pomological investigation for the U. S. Bureau of Plant Industry.

'08, W.A.—H. N. Wells of Castile, N. Y., who was President of the Class in General Agriculture, 1908, has recently been appointed Manager of the Sullivan County Farm Bureau in the State of New Hampshire, with headquarters at Newport, N. H. Since leaving school he has been practicing general farming, in partnership with his father, on their two hundred acre farm near Castile, making a specialty of potatoes and dairying, and also selling large quantities of farm machinery to their neighbors. Wells has always taken an active interest in the extension activities of his community. He helped to organize, was secretary, and a member of the executive committee, of the Wyoming County Farm Bureau during its first year. He is an enthusiastic Granger, has served as Master of Pike Grange, is at present its Lecturer, and is also an officer in the Pomona Grange and a member of the State Grange. He is also a member of several other agricultural organizations. In June, 1913, he was married to Miss Marie S. Knowlton of Gainesville, N. Y. During the summer of 1914 he and his wife took special work in the Agricultural summer school at Cornell. Wells received his high school training at Pike Seminary.

Among the women graduates of the College of Agriculture who are employed by the U. S. Department of Agriculture are the following: Alice Evans, B.S.A. '09; Minnie Jenkins, B.S.A. '07, M.S.A. '09; Anna Jenkins, B.S.A. '11. Miss Minnie Jenkins is serving as pure food specialist and her sister is with the Bureau of Plant Industry.

'09, B. S. A.—Mrs. Herbert Hoose, who was Miss Edna Jenkins, is engaged in poultry farming near Duane.

'09, B.S.A.—George H. Miller is making a study of the cost of producing apples in the far West for the Office of Farm Management, U. S. Department of Agriculture. By the survey method he has obtained a large number of records in the principle apple growing sections of Colorado, Washington and Oregon.

'10, Sp.—Walter G. Page is located at West Edmeston, N. Y., where he is engaged in the breeding of Pure Bred Holsteins with his father. At present they have about sixty head.
'10, W.C.P.—Miss Marjorie Lambert, a winter course student, is now in charge of Poultry Department in the Georgia Normal and Industrial College, Milledgeville, Georgia.

'11, B.S.A.—W. J. Corwin is at Grand Rapids, Minnesota, teaching High School extension work. He supervises the Agricultural work and has charge of all extension work. His district consists of two village schools, three consolidated schools, and fifty-five rural schools. He states that the work is very interesting as well as lots of it. He also states that these high schools are the best equipped in the United States. He was a visitor at the College on Oct. 26. Corwin was recently married to Miss Lora Mowrey of Grinnell, Iowa.

'11, B.S.A.—Waldemar H. Fries again in the Buffalo office of the International Agricultural Corporation. His address is 808 Marine Bank Building, Buffalo, N. Y.

'11, B.S.A.—Lloyd Leick has an 80 acre vegetable and fruit farm at North Olmstead, Ohio, near Cleveland. He originally began with vegetables only, but he is now working into fruit and poultry. He markets, as far as possible, to the consumer, and also to the general markets in Cleveland, thus saving the middleman’s profit.

'11, B.S.—Miss Margaret Ahern is teaching nature study in Gary, Indiana, under Mr. Wirt, whose work has attracted such wide attention in educational circles. His entire system is founded on student honor and the fact that three of his teachers have come from Cornell, speaks well for the Agricultural college both along the line of honor system and educationally.

'11, B.S.—Warren C. Funck, during the past summer and fall, has been conducting a survey of the cost of running farms in central New Jersey, Southern Maine, N. Dakota, Washington and California. He is in the employ of the United States Department of Agriculture.

'12, Ph.D.—Leon Bachelor, who was located with the Animal Husbandry Department of the College, is now head of the Department of Horticulture of the Utah State College, at Logan, Utah.

'12, B.S. in Agr.—Wm. L. Cavert is employed cooperatively by the Office of Farmers' Cooperative Demonstration and the University of Minnesota as Farm Management Extension Agent for the State of Minnesota. This organization is a division of the Agricultural Extension, University of Minnesota and Bureau of Plant Industry of the U. S. Department of Agriculture cooperating.

'12, O.S.—Hattie Barnes is employed in the University Library.

'12, B.S.—Announcement has been made of the engagement of Miss Helen Julia Beye, daughter of Mrs. N. C. Beye of Chicago, to Gurdon Hubbard Hamilton, '12. His address is 322 Forest Avenue, Oak Park, Ill.

'12, B.S.—Miss Clara Browning who has been an instructor at Cornell for two years, now has charge of the Home Economics Department of the Buffalo Technical High School.

'12, B.S.—Herman Crofoot is managing the Farm Bureau work of Cattaraugus county. He is doing special work along the line of experimenting with corn varieties and fertilizers and is working out the cooperative purchase plan of lime and fertilizer.

'12, B.S.—Miss Anna Hunn is running the Home Economics Cafeteria at Cornell.

'12, '14, B.S.—James McCloskey, '12, and Miss Charlotte Sherman, '14, were married in October at the home of the bride in Buffalo. Mr. and Mrs. McCloskey are living on a farm near Hamburg.
'12, B.S.—Daniel O'Brien is teaching Agriculture in the Little Valley High School. He recently constructed a farm management survey of his town in cooperation with the Farm Bureau Agent of the county.

'12, B.S.—James C. Otis was married on July 18th to Miss Cecile E. Mignault of Syracuse, N. Y. He is the originator of a course in agriculture at the Middleton, N. Y., high school. Otis writes that his pupils are engaged in collecting specimens for a local fruit show.

'12, B.S.—C. E. Newlander's engagement to Miss Ida Victoria Hard, of Chicago, has been announced. He is at present instructor in dairy manufactures at the Michigan Agricultural College, East Lansing, Mich.

'13, B.S.—Berdina Crosby is studying medicine in the Cornell Medical College in New York City.

'13, B.S.—Miss Dora Earl writes that she is assistant in the Department of Home Economics at the University of Wisconsin, Madison, Wis.

'13, B.S.—D. S. Fox is instructing in the Department of Farm Management at Cornell.

'13, B.S.A.—B. H. Frary was married on Oct. 14 to Miss Delia Bean, daughter of Mr. and Mrs. W. C. Bean of McGrawville. The couple will reside at Pulaski after November 10.

'13, B.S.—Bruce P. Jones is working with Gilmore and Chavenelle, 412-413 Hammond Bldg., Detroit, Michigan who are members of the Detroit Real Estate Board. He has especial charge of all farm exchanges. He writes that he is enjoying his work. He was at one time Business Manager of the COUNTRYMAN.

'13, B.S.—D. W. Hadsell writes us a very interesting letter about himself since graduation, parts of which follow:

"I went out to the Pacific Coast after graduation in 1913. Spent the summer, fall and half the winter in Hood River, Oregon, and Walla Walla Valley, Washington, and other fruit sections studying methods of fruit growers and getting experience along these lines. Then I came down to Florida in January and looked over the State for about a month and accepted a position with the Coe-Mortimer Co., of Charleston, S. C., to sell fertilizer in Florida. Went up north last summer and spent three months at Cape Cod, where we have some cranberry bogs, came down here again in September and am now selling fertilizer at Orlando. I travel in a machine and find this method, as well as the work, is the very best way to gather information about Florida conditions and methods of farming.

"Farmers down here are not up to date; though many well posted Northerners are coming in now. The Florida "Cracker" is entirely ignorant of modern methods of cultivation."

Continued on p. 316.
HAVE YOU A HOUSE?

Make it

A "Home"

OUR FREE FRUIT BOOK will show you the way

WHILE many people appreciate well arranged and well kept grounds, they do not realize that it is possible to make their own places equally attractive at little expense, through the planting of

Fruit Trees, Ornamental Trees, Roses, Shrubs and Small Fruits

Even the little yard of the city dweller can be made to produce fruit in quantities sufficient for a small family, thus contributing to the health and pleasure of all, as well as

Reducing the Cost of Living

for by producing his own fruit, the grower escapes the high prices demanded in the market.

A SMALL OUTLAY will purchase an assortment of Trees and Plants that will transform your house into a home, greatly increase the value of your property and produce more than enough delicious, wholesome fruit to repay the original cost—far better too, when

Picked In Your Own Garden

fresh with the dew of the morning, than when you are obliged to purchase at the grocery store or the huckster. Our trees and plants are grown in our own nurseries, in the famous Genessee Valley, propagated by experts under the best conditions and shipped direct to you from the nursery row carefully packed to reach destination in excellent condition for successful transplanting. Send for our big illustrated Book today—

"Good Fruit and How to Grow It"

A postal card brings it and you will never regret the investment, for you can save money on your purchase by our direct selling plan.

Reilly Brothers
(The Oasis Nurseries)

9 Reilly Road
DANSVILLE, N. Y.
The orange crop this year is short, but the grape fruit crop is very large, due to new planting in the southern part of the state now coming into bearing.

"Natal Grass, native of South Africa, which looks like timothy, has been found to do well here—three cuttings of about one ton per acre. It is revolutionizing the hay industry of this state."

This is just the kind of letters we like to receive. It contains information that anyone would be glad to get about Florida—telling of the opportunities and the present conditions that are now prevalent in that state. We hope to receive many more such letters from old students and hope to obtain pictures of them in their chosen activities. We are particularly desirous to print news about any former student in these columns, and you will confer a great favor by sending this news in yourself instead of waiting until we write to you asking for such material. We want to liven up these notes by means of pictures of the men at work in their fields or on their farms. But this does not mean that we want to hear from the farmers alone. We want any little bit of news about yourself or some other Cornell "grad" that you have, no matter whether he is teaching, farming or in any other business. We want to hear about you and to tell your old classmates about what you have been doing since graduation.

"Mr. Lloyd Tenny, who has taught Pomology at Cornell is now at Orlando, Florida, acting as secretary of the Florida Land Growers and Shippers League—a worthy association of Florida farmers who are trying to improve conditions here in general. Among other things they are fighting against high freight rates to northern markets, and they are financing the fight against the most serious disease of the citrus tree, citrus Canker, which was imported into Florida about a year ago and is fatal to every infected tree, such trees being burnt down while standing to avoid spreading the germs.

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This is just the kind of letters we like to receive. It contains information that anyone would be glad to get about Florida—telling of the opportunities and the present conditions that are now prevalent in that state. We hope to receive many more such letters from old students and hope to obtain pictures of them in their chosen activities. We are particularly desirous to print news about any former student in these columns, and you will confer a great favor by sending this news in yourself instead of waiting until we write to you asking for such material. We want to liven up these notes by means of pictures of the men at work in their fields or on their farms. But this does not mean that we want to hear from the farmers alone. We want any little bit of news about yourself or some other Cornell "grad" that you have, no matter whether he is teaching, farming or in any other business. We want to hear about you and to tell your old classmates about what you have been doing since graduation.

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"The orange crop this year is short, but the grape fruit crop is very large, due to new planting in the southern part of the state now coming into bearing.

"Natal Grass, native of South Africa, which looks like timothy, has been found to do well here—three cuttings of about one ton per acre. It is revolutionizing the hay industry of this state."

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Former Student Notes  
Continued from page 316

"home project", the farm equipment of land, tools, and horses are at the disposal of the pupil. Other equipment, such as several sets of woodworking tools, benches, forge, anvil drill press, soldering kit, grindstone, Babcock tester, barrel sprayer, pruning tools, and soil-study apparatus kept at the school give ample scope for practice and demonstration. Furthermore the vocational teacher is hired for the entire year, and thus has opportunity for much personal and practical work, in the direction and supervision of these individual enterprises, and in response to requests of farmers during the summer months.

"Cost accounts are kept with every project. A written record of work including a discussion of the principles and practices involved, conclusions and reasons for profit or loss is required."

"Several of my boys, besides keeping chickens, built hen houses from approved plans, making their own blue prints, and doing the carpentry work themselves. Others ran projects in orchard management, tile drainage, potato growing, onions, lettuce, and home garden, ranging in extent from one fourth to one or more acres. As an example of returns, a one half acre potato project gave gross receipts of $76, with a net return of $33. Some projects were run at a loss in money, but, we trust, at a gain in experience."

'13, Grad.—J. B. Bain has resigned from the position of instructor in the Dept. of Animal Husbandry and has accepted a position as Dairy Husbandman in the Bureau of Animal Industry in the Dept. of Agriculture at Washington, D. C. His work consists in supervising some special investigations in determining the cost of producing milk. After he has got his plans formulated for the carrying on of his work he intends to spend several months traveling through the dairy states getting his work organized. He will make his headquarters in Washington. His present address is 201 C St. N.W., Washington, D. C.

'13, '14 W.A.—Albert Horton, who was vice president of the Short Course Poultry Club and who was also on the Debate Team, is now foreman of the Poultry farm at the University of Indiana. He was married in September.

'14, B.S.—Miss Ruth Bayer is teaching Nature Study in the Good-year-Burlingham School in Syracuse.

'14, B.S.—Errol Bird is directing the farms at the Home for Feeble Minded at Rome.

'14, B.S.—Miss Clara Koepka is under Mr. Wirt in the Gary, Indiana, Public schools.

'14, B.S. in Agr.—L. H. Martin, of Crowley, Louisiana, is Demonstration Agent of Assumption Parish in that state, with headquarters at Napoleonville. This is the third largest city in the state and one of the most important. This parish, which corresponds to a county, has large sugar plantations of 5,000 to 10,000 acres. Martin writes that he has often ridden all day on the same plantation. He is making a great success of his work.

'14, B.S.—At a dinner given at the Home Economics Lodge, Saturday evening, November 21, 1914, the engagement of Miss Katherine Mills, '14, to Dr. Hamilton of Delhi, N. Y., a graduate of the Cornell Veterinary College, was announced. The date for the marriage has not yet been decided, but it is expected to occur in the near future. Miss Mills, who was a former Home Economics editor of the COUNTRYMAN, is now engaged in Extension work along Home Economic lines, and will be greatly missed in her chosen field of activity. Her many friends join in wishing her much happiness.
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a day on our campus without becoming enlightened on this point.

As a matter of fact, there are registered in the various colleges of the University 569 women students representing a large number of states. For example we have girls from Memphis, Tenn., from Chicago, California, Ohio, and Pennsylvania tho of course the larger percentage of them come from our own state.

As to their distribution in the various colleges, Arts has the largest number and boasts of 282 women students. There are 230 in various departments of the Agricultural College, 43 graduate students, 24 Medical students, 4 who are studying Law, 1 Architect and 4 registered in the Department of Chemistry. In the Agricultural College itself there is a great variety in the courses chosen. 196 girls are registered in Home Economics, 24 are specializing in some branch of Agriculture, 8 are in the department of Landscape Art, while we have one Forestry student and one who is in the department of Nature study.

As to where the girls live. There are two dormitories on the Campus which accommodate a large number of them. In Risley Hall there are 147 girls, all of them Seniors and Sophomores. In Sage College where the Juniors and Freshmen live there are 175. In houses off the Campus and approved by the authorities there are 49 girls, while 82 live with friends or relatives. 92 girls are registered as living at home and 32 more work for their room and board.

As to distribution in classes: 1918, 174; 1917, 106; 1916, 115; 1915, 114; graduates 43; special students 17; total 569.

Because of the small proportion of women students in comparison with the number of men, our social life is necessarily restricted and in this respect we are somewhat like a girls College and yet we love Cornell and feel that we are a part of a wonderful institution. For the past few years registration of women students has very much increased and it is hoped that each year a new record will be made along this line."

Studies in Silver and Gold from the Dairy

Continued from page 299

SEASONABLE RECIPES.

The following recipes will serve to indicate some of the great variety of ways in which dairy products, in combination with other ingredients, may be served at our tables.

CREAM OF CARROT SOUP.

1 cup finely chopped carrots.
2 cups water.
2 cups thin white sauce.

Boil the carrots in the water until tender. Prepare the white sauce by creaming 2 tablespoons of butter with 2 tablespoons flour, and adding 2 cups of whole milk. Bring to a boil. Cook from 3 to 5 minutes and season with pepper and 1 teaspoonful salt. Add the sauce to the carrot water, and stir until the ingredients are well blended. Serve with crackers or croutons.

CHEESE FONDU.

1 cup bread crumbs (very dry and fine).
2 cups milk.
3/4 lb. cheese (grated).
3 eggs, beaten very light.
1 tablespoon butter.

Season with salt and pepper and a pinch of soda dissolved in a little hot water and added to the milk. Soak the bread crumbs in the milk and beat in the eggs, butter, seasoning and lastly the cheese. Pour into a buttered baking dish, put bread crumbs over the top, and bake in a rather quick oven until a delicate brown.

PARSLEY BUTTER.

1/2 lb. butter.
1/2 cup chopped parsley.
1/2 teaspoonful lemon juice.

Cream the butter thoroughly; add the parsley and lemon juice, mix well together and shape into tiny balls. Chill and serve with meats or fish.
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BOOK REVIEWS


Dr. Gay has divided his book into seven parts. Parts one and two take up the principles and the practice of judging, respectively. Part three is devoted to horses, and there are chapters on the individual, types and classes, breeds of horses, and the mule. Parts four, five and six are concerned with the judging of cattle, sheep and swine. The last part is given over to a discussion of the judging of breeding stock. Live stock shows are also taken up in this chapter.

In the appendix are given a large number of records that are of interest to every animal breeder. A complete compilation of score cards for the judging of all the various breeds of horses, cattle, sheep, and swine are given.

The book contains over 150 illustrations which aid in explanation of many of the points taken up.

MANUAL OF WEEDS, (The Rural Manuals Series, edited by L. H. Bailey,) by Ada E. Georgia, of the New York State College of Agriculture, Cornell University. Illustrated. Cloth, 12 mo.. $2.00 net. Published by the MacMillan Co.

A complete description of every weed that is known to occur in the United States or Canada is given. The classification follows Gray's Manual so that it can be used as a text as well as a reference book. The range and habitat, the crop which each infests and means of control are given. The book is made especially useful on account of the wealth of illustrations that it contains, there being almost four hundred of them.

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Four Good Records by S. C. White Leghorns

<table>
<thead>
<tr>
<th>Breed</th>
<th>Eggs laid 1st year</th>
<th>Eggs laid 2nd year</th>
<th>Eggs laid 3rd year</th>
<th>Total Eggs laid 3 years</th>
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<tbody>
<tr>
<td>Lady Cornell</td>
<td>457</td>
<td>200</td>
<td>191</td>
<td>848</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>425</td>
<td>131</td>
<td>146</td>
<td>702</td>
</tr>
<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
<td>160</td>
<td>526</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>188</td>
<td>220</td>
<td>650</td>
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The leading dairymen in all parts of New York State feed it, and leading dealers carry it in stock and will be glad to supply you. If your dealer does not handle it, write us and we will refer you to the nearest dealer, or endeavor to get your local dealer to handle it or sell to you direct.

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We Grow the Trees We Sell

The buds are cut from bearing trees—this proves the variety. From the minute the bud is cut until the tree is securely packed extra care is taken to keep it properly labeled. Men who are thoroughly trained are responsible for this important work.

More practical nurserymen and orchardists are connected with this organization than with any other nursery firm in America. These men are ready to assist prospective planters in selecting a proper location, choosing the right varieties, planting and caring for the trees. Write us about this orchard service.

Our New Catalogue for 1915

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DE LAVAL

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IN THE SPRING?  IN THE SPRING?
AN ENGLISH APPLE ORCHARD
IN THE SPRING?
WHEN THE SPREADING TREES ARE HOARY
WITH THEIR WEALTH OF PROMISED GLORY
AND THE MAVIS SINGS ITS STORY
IN THE SPRING.

HAVE YOU PLUCKED THE APPLE BLOSSOMS
IN THE SPRING?  IN THE SPRING?
AND CAUGHT THEIR SUBTLE ODOR
IN THE SPRING?
PINK BUDS POUTING AT THE LIGHT
CRUMPLED PETALS BABY WHITE,
JUST TO TOUCH THEM A DELIGHT
IN THE SPRING.

HAVE YOU WALKED BENEATH THE BLOSSOMS
IN THE SPRING?  IN THE SPRING?
BENEATH THE APPLE BLOSSOMS
IN THE SPRING?
WHEN THE PINK CASCADES ARE FALLING
INTO SILVER BROOKLETS BRAWLING
AND THE CUCKOO BIRD IS CALLING
IN THE SPRING.

IF YOU HAVE NOT, THEN YOU KNOW NOT
IN THE SPRING, IN THE SPRING,
HALF THE COLOR, BEAUTY, WONDER
OF THE SPRING,
NO SWEET SIGHT CAN I REMEMBER
HALF SO Precious, HALF SO TENDER
AS THE APPLE BLOSSOMS RENDER
IN THE SPRING.”
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It would be impossible for us to banquet all of our pleased customers during this meeting, as we have been advised that not more than fifty thousand can be seated. This would necessitate many of our pleased customers standing, and we, of course, would not stand for any standing. A representative of our spray preparations who can write orders standing or sitting, will attend the meeting, but being very modest—as well as harmless—he may not get everything wanted, so we kindly ask those who read this to inquire about:

Rex Lime and Sulphur Solution  
Rex Arsenate of Lead  
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Apple, Plum, Pear, Cherry, Peach and Quince, one and two year old, guaranteed true to name, Genesee Valley grown, direct from nursery to planter.

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Yours truly,

EWELL D. BAKER.

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Yours truly,

EWELL D. BAKER.

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actly what says. They are heated by hot water instead of with hot air and are “superior” in every detail. The water boiler and tank (tubular) are of superior” quality; the materials are of highest grade, and the workmanship is done by the last word to date in civilized country on the globe.

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FREE 1915 CATALOGUE fully describes these three styles of incubators and also tells about the nearly 100 other standard articles we manufacture for down-to-date, practical, successful poultry keepers on small or large scale. Be sure to write today—NOW, before you forget it—for YOUR copy. Address as below.

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<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit-Growing as a Business</td>
<td>359</td>
</tr>
<tr>
<td>European Grapes in New York State</td>
<td>364</td>
</tr>
<tr>
<td>The New York State Series—</td>
<td></td>
</tr>
<tr>
<td>Article No. 4—The Soils of the Western New York Fruit and Grain Region</td>
<td>368</td>
</tr>
<tr>
<td>Article No. 5—How Types of Farming in New York are Determined</td>
<td></td>
</tr>
<tr>
<td>The Redemption of Orchard Hill</td>
<td>381</td>
</tr>
<tr>
<td>What Science is Doing for the Fruit-Grower</td>
<td>375</td>
</tr>
<tr>
<td>Some Factors in the Propagation of Nursery Stock</td>
<td>378</td>
</tr>
<tr>
<td>Suggestions to Teachers of Fruit-Growing in the High Schools</td>
<td>387</td>
</tr>
<tr>
<td>Advertising the Apple</td>
<td>391</td>
</tr>
<tr>
<td>The Canning of Fruits and Vegetables</td>
<td>393</td>
</tr>
<tr>
<td>Editorials</td>
<td>396</td>
</tr>
<tr>
<td>Former Student Notes</td>
<td>398</td>
</tr>
<tr>
<td>Student Activities in the College of Agriculture—Part II</td>
<td>400</td>
</tr>
<tr>
<td>Campus Notes</td>
<td>405</td>
</tr>
<tr>
<td>Former Student Notes</td>
<td>408</td>
</tr>
</tbody>
</table>
THE PEAR HARVEST
FRUIT-GROWING AS A BUSINESS

By M. C. Burritt, '08
State Director of Farm Bureaus of New York State

Right or wrong, the average person about to choose a type of farming is influenced to a considerable degree by his personal likes and dislikes, and by his own preconceived notions and by what he believes or prefers to believe are the facts.

To one who has had occasion to answer many inquiries of city men and farmers as to the best kind of farming for a particular locality, a preference for fruit growing usually meaning apple growing is apparent. It is the proper thing in farming. If “everybody is not doing it”, “everybody” wants to do it. Two reasons lie behind this choice: (1) The belief that apple growing is a short road to comparative wealth, and (2) the notion that it is an easy occupation and a sort of idyllic life. While there is just enough of fact in these suppositions to lend them credence both are false assumptions.

Large Profits a Myth. Many of the large profits in apple growing are purely mythical, while a good percentage of the remainder are so stated as to be grossly misleading. This is why the proneness of humanity to believe what it wants to believe proves disappointing in so many cases.

Laying aside the mythical and untrue stories of profits in apple growing which investigation always shows to be unworthy of belief—and the wise investor will always investigate suspiciously large stories of profits—there are some good reasons why uninformed persons are often misled even by statements of facts. Professor Warren has well pointed out that there are periods of under and over production with nearly all crops and that the longer the time required to grow a product the worse these periods become. This means times of high and low prices. We have just experienced a high price period in apples. Profits in apple orcharding have been judged by those in this period. Natural American optimism has done the rest and we are just closing a period of very heavy apple tree planting. A similar period was that between 1855-1875. It was followed when the trees came into bearing by a period of about twenty years of extremely low prices which was accompanied by a practical cessation of apple planting.

During this period of depression in the apple business, there was also a marked neglect of the care of bearing orchards, when the products of thousands of trees were unmarketed. This led to neglect and the destruction of trees and even whole orchards by insect pests and diseases, the chief of which were the army worm and the San Jose Scale. The enormous crop of 1896 was the climax of this period and led to the cutting down of some apple orchards. The withdrawal of
so many old bearing trees, especially in those sections where fruit-growing was not the primary business had its effect in a considerably lessened supply. Moreover, the great crop of 1896, also had a favorable aspect for it forced apples into markets which had not heretofore known them commercially. Almost simultaneously came the practical application of the cold storage and the refrigerator car, permitting the distribution of the crop over a longer season. The more systematic development of the business and of advertising apples has also had its effect.

In undertaking apple growing as a business these facts should be kept in mind. In estimating probable returns too, the average of a long period of years should be taken rather than one big crop year or even a ten year average in a mature orchard. We hear stories of yields of 15 and 20 barrels per tree, but few ever heard grower will figure on. The radicals will, of course, gamble on the possibilities, but 95% of them will probably loose.

Let me give you one other example of a misleading method of figuring profits. Suppose that one grower does realize a net profit of $500 an acre in one year, as may happen once in ten years in exceptional orchards. This is far from an average, because he undoubtedly had almost a total failure another year. It is improbable that an average well cared for orchard will return more than $100 an acre annual net profit even in the last ten years period of high prices. If this is true it is improbable that such an orchard averaged more than $50 an acre profit in the preceding twenty year period of low prices. Assuming that the orchard is forty-five years old and in its prime and remembering that such an orchard made no profitable returns under twenty years of age, we have an average annual profit for its life time of about $45 an acre which is somewhere near a reasonable expectation for orchards of good varieties properly cared for, and advantageously marketed. Against this estimate we must offset thousands of

ORCHARD OF JAS. CRAMER, MIDDLEPORT, N. Y.

of 400 and 600 barrels an acre. But the facts remain that the average yields in Western New York, for example, are not over six to eight bushels per tree or 70 to 90 barrels per acre. These figures represent the probabilities which the conservative
trees of poor or unadapted varieties, improperly cared for and disadvantageously marketed which usually result in a heavy loss or at best a very small profit.

Fruit-growing as an Occupation. Few will deny that the life of the fruit-grower has not many advantages over that of other farmers, as the dairyman for example. The work is less constantly exacting, the days are shorter there being fewer "chores" to do, it is less confining allowing him to get away more frequently and giving him a long rest and vacation period in the winter time. It is true that there are periods when the fruit-grower must be constantly on the watch and at his job, such as in the spraying and in the harvest seasons, but these are comparatively short. Trees differ from cows, not in that they require less care, but in that they require less constant daily attention throughout the year. Live-stock means "chores" morning and night and hence longer hours of work.

Perhaps the characteristic of fruit-growing as a business, which makes the strongest appeal to many people is the period of about three months in the winter when the farmer is free to rest or go to Florida or California, if he can afford it. This is, however, an appeal to the naturally lazy streak in men and to a man's love of pleasure seeking, rather than to his business sense. It is not a good occupation from a business viewpoint which provides only nine months work in twelve.

There are few occupations in which persons can make a good years income by working only three-quarters of the year. Instead of being an advantage this period of idleness is really the greatest weakness in the business. In too many cases idle men and horses destroy much of the profits earned during the rest of the year.

Production and Consumption of Fruit. We have considered so far chiefly the disadvantageous factors in the fruit business. I have purposely emphasized these both because they are important and because they are generally given far too little consideration. There is, however, a more encouraging side though this is nearly always featured and over emphasized.

Up to 1910 there was a steady and marked decline in the total yearly United States crop of apples as indicated by the following table:

| Year Aver. 1896-1900 | Inc. 46,690,200 bbls. |
| 5 " 1901-1905 | 37,178,200 " |
| 5 " 1906-1910 | 28,582,000 " |
| 4 " 1911-1914 | 38,443,750 " |
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Estimating the 1914 crop at a round 50,000,000 barrels, the average crop of the last four years is practically 10,000,000 barrels greater than the average crop of the previous five years, but still 8,000,000 barrels less than the five year average crop of the 1896-

In the great state of Pennsylvania, for example, the number of trees of bearing age declined from 11,774,000 in 1900 to 8,000,000 in 1910. To replace these only 2,501,000 trees were planted leaving a net loss of 1,273,000 trees in the ten years.

WHERE FRUIT-GROWING IS A PART OF A SYSTEM OF GENERAL FARMING—ONONDAGA COUNTY

1900 period. There are good reasons for these facts.

In spite of the fact that there were in 1909, 65,792,000 trees not of bearing age, which means practically that at least 50,000,000 trees were planted between 1900-1909, the total number of apple trees increased only a little over 15,000,000 or 9.2 per cent. During the same period the population increased nearly 16,000,000 persons or 21%. In other words the new plantings heavy though they were during this period did not keep pace with the increase in population.

This condition is partly the result of the rapid dying out of old apple orchards in the Eastern States, particularly in sections not devoted primarily to apple growing. To become impressed with the rapidity with which these old orchards are disappearing, as a result of neglect, wind storms, ravages of insects and diseases, poor marketing facilities, and other causes, one has only to observe these sections carefully or examine the census figures.

In New York, the greatest deciduous fruit-growing state in the union, the situation is the same, a loss of 3,807,000 bearing trees replaced by only 2,829,000 trees with a net loss of nearly a 1,000,000 trees. Comparing non-fruit-growing counties with those primarily devoted to the business, we are still more impressed with the rapidity with which the old orchards are going out, and also the tendency to specialize and localize the business of fruit-growing. Ten New York counties in which the growing of apples is not a primary industry, namely: Allegany, Broome, Jefferson, Madison, Delaware, Herkimer, Albany, Nassau, Warren, and Franklin showed a decrease of 31% in the number of bearing trees between 1900 and 1910, while five prominent fruit-growing counties, namely, Niagara, Orleans, Monroe, Wayne and Ontario showed a decrease in bearing trees of only 9%.

Exports and Consumption. Our exports of apples have more than doubled in the last ten years and the increase
has been particularly rapid during the last five years. It is also probable that per capita consumption has increased to some extent particularly in those places where a regular supply is available at a moderate price. Professor H. B. Knapp has shown that the average yearly receipts of apples at New York City during the ten years from 1904 to 1913 were 1,110,000 barrels or 43% greater than in the ten years from 1893 to 1903. It is also to be noted that many new markets have recently been opened up.

It is evident to every one that there are two sides to the question. I am not a pessimist about the apple business. On the other hand I am enough an optimist, so that under the right conditions I would not hesitate to add to the twenty-five acres of apple trees, I have already planted and in bearing, but I recognize the limitations in the business.

Summary. Without taking the space to demonstrate the truth of the assertions, as I could do, I will bring this article to a close by pointing out what seem to me to be some of the most important limitations and the opportunities in fruit-growing as a business.

1. The original outlay, the long waiting period to bearing and the constant fight against insects and diseases require large capital and it is extremely inadvisable for a person with small capital to engage in the business. Here and there a man will succeed with a small capital, but the wise man will take averages rather than exceptions as his guide.

2. Location with reference to markets and to other persons engaged in the same business is very important. Here is a limited opportunity to grow apples for local markets near almost every large city in the eastern states. As a general rule, however, prices average much better in regions where apple growing is an important industry, because quantity encourages standardization, affects buyers and permits cooperative advertising and selling.

3. The cost of production to a locality or on a particular farm is an important factor in determining profits. As a general rule, and excepting very large fruit plantations where several kinds of fruit are grown, apples can be produced cheaper on the general or diversified farm primarily because of a better distribution of labor which is approximately one-half the cost of apple production. On such a farm twelve years of accurate farm records show that the average cost of growing apples is less than $1.50 a barrel and that in favorable seasons with large crops, this cost sometimes falls as low as $1.00 a barrel. Farms which cannot produce apples at this low cost are disadvantaged accordingly, unless they are able to command a market price above the average which few growers are able to do.

4. Soil is a relatively unimportant factor in apple growing because there are many hundreds of thousands of acres of suitable soils more than will ever be needed for apple production. Adaptation of variety to soil is important. Too much attention cannot be given to climatic factors such as length of the growing season, rainfall, temperature, particularly in winter, as influenced by nearness to bodies of water, exposure to winds, elevation, etc., as these limit profits directly.
EDITOR'S NOTE—Experiments at the Geneva Experiment Station are proving that there are great possibilities for European Grapes in New York State.

I need only remind readers of the Countryman of the many efforts to grow European grapes in America. The various attempts, some involving individuals, others corporations and in the early days even colonies, form some of the most instructive and dramatic episodes in the history of American agriculture. All endeavors, it will be remembered, were failures, so dismally and pathetically complete that we are wont to think of the 200 years from the first settlements in America to the introduction in 1816 of the Isabella, a native, as time wasted in futile culture of a foreign fruit. The early efforts were far from wasted, however, for out of the tribulations of two centuries of grape-growing came the domestication of our native grapes, one of the most remarkable achievements of agriculture. It is possible, too, that we may find that the failures of the fathers of American viticulture are the foundations for the success of the sons.

The advent of Isabella wholly turned the thoughts of vineyardists from Old World to New World grapes. So completely, indeed, were viticulturists won by the thousand and more native grapes that came trooping in that for the century which followed no one has planted Old World grapes east of the Rockies while vineyards of native species may be found north and south from the Atlantic to the Pacific.

Meanwhile, much new knowledge has come to agriculture, old fallacies have had many hard knocks and chains of tradition in which the culture of plants were bound, have been broken. In no field of agriculture have workers received greater aid from science than in viticulture. Particularly this is true of the diseases of the vine. The reports of the old experimenters were much the same, "a sickness takes hold of the vines and they die". What the sickness was and whether there were preventives or remedies no one knew a hundred years ago. But we have learned something about the ills grape flesh is heir to with preventives and remedies for them. We know that the early vine-growers failed in part at least because they followed empirical European practices. Is it not possible that in the last hundred years we have advanced sufficiently in our knowledge of the vine and of soils and insects and fungi that we can now grow Vitis vinifera in eastern America where the old experimenters failed? The Geneva Experiment Station is putting this question to test with what result I am now to tell.

In the spring of 1911, the Station obtained cuttings of 101 varieties of European grapes from the United States Department of Agriculture and the University of California. The object was to obtain European varieties to hybridize with American grapes. I hasten to say that at first there was no thought nor plan to experiment with these grapes as a cultivated crop. The cuttings obtained were grafted on the roots of a heterogeneous collection of seedlings five years set representing a half dozen species of Vitis and hybrids between them then growing on the Station grounds. These stocks had little to recommend them except that all were vigorous, well established and all were more immune to phylloxera than the Old World varieties. From four to six grafts of each of the hundred varieties were made and a stand of 380 vines resulted, the percentage of loss being exceedingly small. The success in grafting we believe to be due to the method used, one the value of which had been proved in previous work on the Station grounds.

In grafting the earth was removed from plants to be grafted to the depth of two or three inches. The vines
were sawed squarely off below the surface of the ground. The stock was then split for a cleft graft. Two cions were inserted in each cleft and tied in place with waxed string. Grafting wax was not used, the wax being worse than useless because of the bleeding of the wounds in the stock. The earth was then replaced and enough more of it used to cover stock and cion to prevent evaporation of the early failures. The stocks used in the present work are not those best suited either to the vines grafted on them or to resist phylloxera. Unquestionably some of the standard sorts used in France and California from *Vitis rupestris* or *Vitis riparia*, or hybrids of these species, would have given better results. From theoretical consideration it would seem that the Riparia stocks should be best suited to the needs of eastern America.

It was thought by the old experimenters that *Vitis vinifera* failed in the New World because of unfavorable climatic conditions. It was said that the winters were too cold and the
summers too hot and dry for this grape. During the few years the Station vineyard of Viniferas has been in existence we have had stresses of all kinds of weather to which the variable climate of New York is subject. Two winters have been exceedingly cold, killing peach and pear trees; one summer gave us the hottest weather and the hottest day in twenty-years; the vines withstood two severe drouths and one cold, wet summer. These test seasons have proved that European grapes will stand our climate as well as the native varieties except in the matter of cold—they must have winter protection.

To growers of American grapes the extra work of winter protection seems to be an insuperable obstacle. The experience of several seasons at Geneva shows that winter protection is a cheap and simple matter. Two methods have been used; vines have been covered with earth and others wrapped with straw. The earth covering is the cheaper method and the more efficient. The vines are pruned and placed full length on the ground and covered with a few inches of earth. The cost of winter protection will run from two to three cents per vine. Since the European vines are much more productive than those of the American grapes the added cost of winter protection will be much more than offset by the greater yield of grapes. Trellising, too, is simpler and less expensive for the European grapes, helping further to offset the cost of winter protection.

It is apparent at once that European grapes must have special treatment in pruning if they are to be annually laid on the ground. Several modifications of European and California practices can be used in the East to bring the plants in conditions for winter laying-down. All methods of pruning must have this in common; new wood must be brought up from the base of the plant every second, third, fourth or fifth year in order to permit the bending of the plant. In our experiences we have no difficulties in so training the vines. Briefly, we have maintained for each vine two trunks, one old, the other young, which we have carried up to or just below the first wire in a two wire trellis system and from each of these trunks we have laid off a cane to right and left on a lower wire each bearing from four to eight buds. The bearing shoots that grow from the buds on these canes are tied to the second wire. In a commercial vineyard, depending upon the varieties, our simple method might be modified in many ways to meet conditions.

The grower of European grapes grafted on American vines may be prepared to be surprised at the growth the vines make. At the end of the first season the grafts attain the magnitude of full-sized vines; the second season they begin to fruit more or less abundantly and the third year they produce approximately the same number of bunches as a Concord or Niagara vine and as the bunches of most varieties are larger than those of the American grapes the yield, therefore, is greater, the European varieties too, may be set more closely than the American sorts since they are seldom such rampant growers.

It is quite too soon to reason from this short experiment that we are to grow varieties of Vitis vinifera commonly in New York but the behavior of the vines on the Station grounds seems to indicate plainly that we may do so. At Geneva the European varieties are as vigorous and thrifty as American vines and quite as easily managed. Why may we not grow these grapes if we protect them from phylloxera, fungi and cold? In Europe there are varieties of grapes for nearly every soil and condition in the southern half of the Continent. In Eastern Europe and Western Asia the vines must be protected just as we shall have to protect them here. It seems almost certain that from the many sorts selected to meet the various conditions of Europe we shall be able to find kinds to meet the diverse
soils and climates of this continent. And here, by the way, we have one of the chief reasons for wishing to grow these grapes—that American grape-growing may not be so localized as it now is. Probably we shall find that European grapes can be grown in more kinds of soils and under more various conditions than are our natives.

The culture of *Vitis vinifera* in the East gives us essentially a new fruit. If any considerable degree of success attends their culture wine-making in Eastern America will be revolutionized for the European grapes are far superior to the native sorts for this purpose. Varieties of *Vitis vinifera* have a higher sugar and solid content than do those of the American species and for this reason as a rule keep longer and we may thus expect that through these grapes the season for this fruit will be extended. The European varieties are better flavored, possessing a more delicate and a richer vinous flavor, a more agreeable aroma, and are lacking in the acidity and somewhat obnoxious foxy taste of many American grapes. Consumers of fruit will like them better and the demand for grapes will thus be increased.

The advent of the European grape in the vineyards of Eastern America ought quickly to bring about splendid varieties of hybrids between *Vitis vinifera* and the American species of grapes. As all know, we have many such hybrids but curiously enough scarcely more than a half dozen varieties of European grapes have been used in crossing. Most of these have been greenhouse grapes and not those that could be expected to give best results for vineyard culture. As we come to know the varieties best adapted to American conditions we ought to be able to select European parents to better advantage than we have done in the past and thus produce better hybrid sorts.

From the 85 varieties of *Vitis vinifera* now fruiting on the Station grounds we may name the following as worth trying on a larger scale: Actonia, a table grape; Chasselas Golden for the table; Cinsaut for table or wine; Feher Szagos another table sort; Kuristi Mici for the table; Lignan Blanc a very early table grape and one of the best; Mantuo de Pilas, Muscat Hamburg, Pinot Gris or Rulander three of the best table grapes; Poulard a wine and table grape; Palomino or Listan a table and wine grape; Rosaki a table grape; Sultanian Rosea, a seedless table sort; and Teinturier, Petit Syrah, Franken Riesling and Zinfandel, all wine sorts.

I have briefly set forth the essentials of the work with *Vitis vinifera* in New York but I shall have missed an opportunity if this simple statement of facts ends here. Permit me to suggest several phases of the work in need of careful experimental attention.

First, it is imperative that we know more about the adaptation of European varieties to American conditions. More than a thousand varieties of grapes are grown in Europe and Asia but few of which have been tried in Eastern America. Those most promising for the different regions should be carefully tried out.

Second, it is very certain that we shall have to grow European grapes on American stocks. We must determine experimentally what stocks are best for eastern America; here the experience of European countries and California will be most helpful.

Third, a great obstacle in the way of growing European grapes in this region is the difficulties in getting a good stand of grafted plants. Possibly we shall have to modify practices elsewhere to determine which we must have experimental work in grafting and propagating.

Fourth, European varieties will be differently effected by fungi and insects than are our native sorts and we shall have to modify remedial treatments of pests for the foreign grapes.
Fifth, there is a tremendous field for plant breeders in hybridizing European and American grapes. The half dozen European sorts that have been used in hybridization are in part those that would be least expected to give good results—greenhouse grapes. It is probable that the American grapes of the future will be European grapes with a dash of American blood in them. Plant breeders have a wonderful opportunity to breed grapes, despite the fact that more work has been done in improving this fruit in the past hundred years than with any other.

THE SOILS OF THE WESTERN NEW YORK FRUIT AND GRAIN REGION

ARTICLE NO. 4

By Elmer O. Fippin

Professor of Soil Technology, New York State College of Agriculture at Cornell University

EDITOR'S NOTE—This is the fourth of the series of articles dealing with the Agriculture of New York State.

THE most prosperous and well developed agricultural part of New York State lies adjacent to Lake Ontario and Lake Erie on the south side within a distance of five to forty miles. Practically all the land is in farms and more than 75 per cent of the area is improved. No where else in the state are there such extensive areas of relatively level land. No where else over so large an area is the elevation so low. No other part of the state has such a diversity of crop interests, or such intensity of crop production on as large a scale. No where else is there such varied soil conditions or such large areas of soil of such high productive capacity. In density of rural population, value of land and extent of transportation facilities by wagon road, steam road, electricity and by water, this region of western New York stands clearly in the lead. It may fairly be termed the flower of New York State’s agricultural domain.

Location. The fruit and grain region begins a little east of Syracuse and extends westward to the boundary of the state. From the Great Lakes it extends southward a varying distance. At the east it ceases about ten miles south of Syracuse. In the Finger Lakes region in central New York, it swings further south, especially along the shores of those lakes, forming a loop. In the western part adjacent to Lake Erie it forms a narrow strip of land which is only four or five miles wide. In a general way it is limited on the southern side by the 1000 foot contour of elevation. This forms a waving and sinuous line around the northern front of the southern New York hill lands.

Drainage. The drainage is all northward into the Great Lakes, chiefly by small streams. Only two important rivers traverse the region—the Genesee and the Oswego. The natural drainage is poorly developed as a result of the undulating and flat topography and extensive areas of wet and swamp land have resulted. The Oak Orchard Swamp in the western portion and the Montezuma and Cicero swamps in the eastern part are the most extensive of these. Small swamp and muck areas are numerous.

Physiography. The topography is very diverse. It is made up of two more or less distinct plain areas. Their identity has been largely effaced in the eastern part of the region. These plains are the Ontario Lake plain, best developed west of Roches-
ter, and the Erie Lake plain, best developed west of Batavia and southwest of Buffalo. These two plains are separated by a rather sharp slope. This begins at Lewiston on Niagara river where it is highest and best developed. It extends eastward through Medina to Rochester where its identity is largely lost. The general slope of both plains rises to the southward. East of Rochester the two merge into a broken swell. South of Lake Erie the plain is limited by a steep bluff.

This also fades into the foot hills as it extends eastward.

The distinct plains have a slight undulating surface. The remaining area of the region has a decidedly rolling to hilly surface. A considerable part of this hilly land is made up of a peculiar type of hill of a long, rounded, tadpole outline, termed drumlins. These are best developed in Wayne county and eastward to Auburn and Syracuse. Westward they fade out in the region of Lockport. Southward they give way to a more general surface swell. These drumlin hills have their long axes in a general north and south direction, but arranged somewhat on the radii of a circle whose center is near the northeastern shore of Lake Ontario.

There are two distinct belts of low steeply from the lake shores to the highland ridges that belong to the southern New York province and have an elevation from one to two thousand feet or more in height.

**Climate.** The climate has no very distinct features except the modification due to the Great Lakes which is perceptible only two or three miles inland. The prevailing wind is westerly. The annual rainfall is low relative to the state. In the region of Buffalo and Lockport the summer rainfall is the smallest in the state.

**Soil Conditions.** The diversity and productive capacity of the soils which are the basis of the high agricultural development of the region are the result of a combination of processes. Chief of these are the nature and
position of the underlying rock strata and the influence of glaciation.

The soils range from heavy stratified clay to loose sand and gravel. They range from those free from stone to those strewn thick with large and small boulders and rock. They range from soils where there is scarcely enough earth to cover the rock to drift a hundred feet or more in thickness. A large part of the land is notably calcareous, especially in the subsoil, and this is a large factor in its productiveness. In general the stock of organic matter is fairly good but requires attention.

The first step in glaciation was the advance of the continental ice sheet from the north over this region. It attained great depth and left as a ground morain a fairly deep but irregular sheet of till. It has been suggested that the drumlin hills may represent either unequal deposition beneath the slow-moving ice mass, much as sand bars are formed in streams, or they may represent the re-advance of the ice over a deep deposit and unequal erosion of the old material.

Wherever the till is deep and especially to the southward of the limestone outcrops, the glacial till is very calcareous. In the surface soil the lime content may now be low due to leaching. South of the last limestone outcrop the lime in the subsoil gradually decreases in amount and retreats deeper into the subsoil. The region merges very gradually with the highland region to the southward. The calcareous till extends much further south in the valleys than over the hills.

During the retreat of the glacial ice the great volume of water resulting therefrom was imponded between the front of the ice and the height of

Geology. The underlying rock consists of a succession of blue, red and gray sandstone and limestone strata that have a moderate dip to the south (See map by Von Englen, Cornell Countryman, October, 1914, pp. 19.) The outcropping edges of these strata extend from east to west. Limestone formations occur in two strips. One by Lockport and Rochester and thence to Syracuse. The other by Buffalo, LeRoy, Geneva and Auburn. The occurrence and position of these calcareous formations should be kept in mind as an aid in interpreting the character of the soils.
The prevailing soil is a heavy loam to a clay loam. There are extensive areas of silt loam and several small areas of drifting sand. Gravel deposits are widely distributed.

Nearly all the hollows between the hills, the important plain areas, and the shores of the Finger Lakes were covered by glacial and lake stream deposits. Consequently they are occupied by a series of gravelly, sandy, silty and clayey soils. This variation represents the range from swiftly flowing streams to quiet lake water.

These deposits which are stratified, are more or less calcareous, especially in the subsoil since they are the wash from the higher lying calcareous till soils.

Classification of Soils. As a result of the geological conditions outlined above, seven important series of soil have been developed. Two of these are of glacial till origin. Four are of lake and swamp derivation and one is made up of recent stream deposits. There are several other series of minor extent.

Glacial Soils. The two glacial till series are the Ontario and the Honeoye, and are distinguished primarily by their content of lime carbonate and the depth of material.

Ontario Series. The Ontario series is the most extensively developed of any in the region. It includes the drumlin areas and rolling hill land that rises to the southern New York highland. The material is deep and moderately calcareous. There is usually sufficient lime carbonate at a depth of three feet to effervesce freely with acid. Above that depth its presence is uncertain and it is seldom present in the surface foot except in the form of pebbles and larger stone. The soil is a dark gray to reddish brown color. The subsoil is a dark chocolate-brown to dark gray or bluish color. A pink tinge is imparted by the presence of red shale and sandstone material from formations on the Ontario plain, and they increase in amount from the south to the north. The series does not occur west of Buffalo.

There are two predominant types in the series, the loam and the fine sandy loam and both are extensively developed. They have a very similar relation to the chief crops of the region. The fine sandy loam is slightly warmer and produces a somewhat more rapid growth. Its drainage is slightly better than the loam type. Both soils are variable in nature within the section. In addition to the unstratified till that forms much of the section there is likely to be a lenticular structure made of thin bands of clay, silt, sand, and gravel of small extent. These form small pockets and indicate reworking by water. It is rather more noticeable in the fine sandy loam than in the loam type. The heavier layers, together with the coarser material, develop wet pockets and springy areas that require drainage.

The soils of this series are derived from the shales and sandstones of the region with a large admixture of limestone material from the local formations. Limestone boulders are a feature of the soils. Granite and sandstone boulders are much more abundant than the limestone.

The stone in the soil does not interfere seriously with tillage operations. All the staple, grain, forage and fruit crops are grown on these soils. The apple orchards are most largely developed on these soils. The apple orchards are most largely developed on this series which may be designated as the pre-eminent series for apple production in the state. The trees grow to large size, are vigorous and long-lived. Trees a century old may be found. High quality and good flavor are normally secured. Not enough data are available from which to draw any conclusions as to differences between the loam and the fine
sandy loam. In general it is believed the longest lived trees and the best keeping quality and flavor of the standard varieties are secured on the heavier soil when in good physical condition.

Peaches are grown successfully on these soils. Other fruits are also grown successfully but they are grown more extensively on the lighter soils of the Dunkirk series.

Throughout the Ontario series good apple orchards are common. They stretch eastward from the Niagara river into Wayne and the western edge of Oswego county. In fact an area of this series occurs in southern Jefferson county where some apples are grown upon it. The orchards spread southward into Genesee and the northern half of the second tier of counties from Lake Ontario. This includes Wyoming, Livingston, Ontario, Seneca, Cayuga and Onondaga counties. The apple industry is spreading eastward and southward, keeping pretty much to these soils.

Grapes are not extensively grown on the Ontario soils, although the Niagara grape was produced on the loam type near Lockport.

In addition to the grain, hay and forage crops which are extensively and successfully grown on these soils, two crops should be specially noted. These are beans and cabbage. Their production is largely developed as field crops.

Beans are predominant in the Genesee valley region south of Rochester. They are grown as far west as Buffalo and east to Auburn. On the other hand the production of cabbage is more confined to the southeastern part of the region. Its production while widely distributed is best developed east of the Genesee river near Geneva, Auburn, and south of Syracuse.

The Ontario soils are pre-eminent for the production of alfalfa, and in their best developed parts just below the Ontario escarpment have formed the natural alfalfa country where the crop has long been grown successfully with very little care.

The series is usually marked by thrifty farms, except where it is remote from shipping facilities.

Honeoye Series. The Honeoye series of soils is very much more limited in extent and agricultural importance than the Ontario series. It forms narrow bands closely confined to the outcrop of limestone formations.

The soil formation is thin, often being less than three feet in thickness over limestone. Limestone fragments are abundant in the material. Both soil and subsoil are strongly calcareous and effervesce freely with acid.

The soils are most extensively developed in connection with the exposure of limestone through Leroy, Geneva and eastward by Auburn and central Onondaga county.

The stony loam has been recognized in largest area. The loam and fine sandy loam probably will be more extensively recognized in the eastern portion of the area where it merges with the Farmington series with which it is closely related.

The soil is usually a very dark gray fine sandy loam. The subsoil is dark gray to a light brown color and in the stony type meets ledge limestone at two to three feet in depth. Outcrops of rock are common which makes a pocketed condition of soil. Large and small fragments of limestone are common.

Where the soil is deep—three feet or more—it has a high agricultural value but on the whole the series is much inferior to the Ontario and there and there are no outstanding crop relations.

Lake Formed Soils. The Dunkirk and Westfield series include the glacial lake deposits of the region. The former is characterized by a chocolate brown and pinkish color. The latter by a yellow or light brown color. The Dunkirk series occurs almost entirely east of Buffalo. The Westfield series is developed west of Buffalo. The former is on the whole the better agricultural soil. These lake-formed
soils occupy all the more level areas and the lower-lying portions of the region.

The coarser members of both series found on the shores and as outwash material may ultimately be placed with the Chenango and Adams series. These include the shore beaches, such as the beach on which the ridge road is located from Sodus to Lewiston and from Hamburg to State Line. Near Pittsford in eastern Monroe county is an extensive area of dune sand of very little agricultural value.

Both series are usually calcareous in the subsoil.

Dunkirk Series. The Dunkirk series owes its peculiar character to the red shale and sandstone of the Lockport and Medina formations on the Ontario plain. That color is less distinct to the southward. The types range from heavy clay to light sand and silt. Tree and small fruits are extensively grown on the coarser members of this series. Peaches and cherries are especially identified with the silt and fine sandy loam. The silt loam is the preeminent soil used for nursery stock around Lockport, Rochester and Geneva. Nursery stock is also grown on the clay loam. These soils give rapid growth and the roots can be well preserved in digging for shipment. The clay and clay loam are most used for hay production and timothy meadows may continue to give fair yields for six to eight years.

Grapes are extensively grown on the clay loam soil in the Finger Lakes region and especially along the shores of Seneca and Keuka Lakes. The sandy and gravelly loam are used to a less extent.

Lack of subsoil drainage and bad physical conditions in the heavy types are the most serious handicap.

Westfield Series. The Westfield series includes the light yellow and light brown soils on the Lake Erie plain and along the foot of the Erie escarpment. The types range from heavy clay through silt to sandy and gravelly loam. The heavier soils usually form the sub-structure and the lighter soils are unevenly distributed over their surface. Clay and silt loam of the old lake plain predominate. Sandy loam is common. The beach bars are gravelly and sandy.

From near the mouth of Cattaraugus creek westward the production of grapes is the pre-eminent business and the region is known as the Grape Belt. They are grown on all kinds of soil, including the gravelly and sandy members on the “ridge.” Blue
grapes suited to the manufacture of grape juice largely predominate. The heavier soils when well drained and in good condition give best results and the vineyards are longer lived. The industry is extending up the escarpment on the shaly, clayey, loam soils of glacial origin.

The most important problem in the growth of grapes in this region is good underdrainage. Next is the maintenance of organic matter. Both are much needed.

Between Cattaraugus creek and Buffalo the production of vegetables and small fruits is the leading business on these soils. The silty, sandy and gravelly soils are used.

Swamp Soils. These are associated with the Lake soils. They represent the areas where swamp conditions prevailed until artificial drainage was introduced. Consequently they are made up of alluvial wash and accumulated organic matter.

Muck Soil. Where the material is mostly organic, it forms peat and muck soils. These are most common in the Dunkirk-Ontario region. They are widely distributed in small and large areas of irregular shape. The Oak Orchard swamp north of Batavia is largest. The South Lima deposit in northeastern Livingston county is perhaps best known for the production of vegetables. Only a small part of these areas are cleared, drained and under cultivation. Drainage is the first requisite. Deposits of a soft lime carbonate known as marl are extensively developed beneath many muck formations and pure deposits are used as a source of agricultural lime.

Vegetables including lettuce, celery, onions and spinach are largely grown. Special fertilizers rich in potash are required.

Clyde Series. The swamp soils of dark color where organic matter does not predominate form the Clyde series. The types range from clay to sandy loam. They are best developed on the Ontario Lake plain west of Rochester, where drained they form very fertile soils for hay, forage and vegetable crops.

Stream Deposits. The deposits formed by the recent overflow of streams constitute the Genesee series. They form wide bottoms along the Genesee river in Livingston county. Nearly all the smaller streams have similar deposits. The loam and silt loam types predominate. Some clay is found in the large bottoms.

The soil is a dark gray color with very little distinction between soil and subsoil. Organic matter is fairly abundant and deeply distributed. This soil is deep and friable, and free from stone. The danger of overflow limits the use of these soils. They are preeminently suited to corn, and canning crops, especially peas, are grown. Hay is extensively produced on these soils. Near Dansville a somewhat higher lying phase of the silt and clay loam is extensively used for the production of nursery stock.

Agricultural Conditions. The farms throughout this region are of medium size and generally range from 50 to 200 acres in area. There are many small farms devoted to the production of fruit and vegetables. Money crops predominate. Where hay and grain are produced, dairying is practiced. Land values range from 60 to 1000 dollars, depending upon location and state of development. The latter figure represents areas set to producing fruits. From 100 to 200 dollars is the more common range in price.

Soil Improvement. With the exception of underdrainage, there are no preeminent lines for soil improvement. The soils require good handling in all ways to which they will respond generously. When well handled, commercial fertilizers do not have a very important place, especially for tree fruits.

Lime has some value in starting acid-sensitive crops. Drainage, good tillage, and the maintenance of organic matter will give very large results.

The area and yields of all the important crops can be much increased by better farming methods. Progress is likely to be in the line of intensity of production and better business organization for all agricultural operations.
THE REDEMPTION OF ORCHARD HILL
E. W. Mitchell, '09

The Experiences of a Cornell Graduate in Building Up a Run-Down Fruit Farm

ORCHARD HILL is a fruit farm of about 150 acres, a flat loamy farm that can only claim the name of "Hill" because the land slopes away sharply on one side to the Kinderhook Creek, which has cut for itself a deep broad bed to carry away the cold air from the trees nearby, as well as the excess water.

When I first saw the place, it did not look prepossessing, in fact, no one in passing gave it more than a pitying glance. The barn had been burned and the two year old ruins had gradually spread over the yard and garden, and for twenty years tenants had let the fences sag and fall and everything run down. The trees looked forlorn. The pears were full of blighted limbs that had been uncut for years and the apple trees were thick with limbs that were dead and dying. The place recalled to mind Goldsmith's description of the "Deserted Village".

To recount how I inventoried and appraised every tree and shed; every acre of ground and improvement; how I figured on the cost of repairing, building up and replanting, and lastly how I labored with unsympathetic people to forward the necessary money to buy the place would take too much space for this article: but finally on Dec. 1, 1909, I owned Orchard Hill with some aged cows, horses and tools and a very little hay and straw.

I could write a book on the little incidents that made each day interesting, the trifles that make farm life what it is; how on Dec. 2nd, Old Stump, the best horse of the four got colic and died—as much, I think from my too generous use of medicine as from colic; how George and I skinned him in the cold and snow, and sold the hide for enough to pay for the days labor. How I tried to sell the cows to a butcher who refused to risk driving them home in their sad condition, so I perforce, had to turn butcher and peddler myself; how "Old Doll" would lie down to sleep in harness and send the cold chills up my spine, and many other things that go to make up the game.

But now for the work: first I cut the suckers around the base of each tree, I dug out the borers, of which there were as many as eight in some trees about 1800 in all, and found hunting borers much better sport than hunting rabbits and far more profitable. Next I cut out all the collar rot, diseased bark on the trunks, trimmed any wounds and painted the bare spots with strong lime sulphur, followed by gas tar. This was a long, back breaking job, but at last it was done, and I knew that the base of every tree was as near right as surgery could make it.

With the foundation laid, we started on the tops. First I cut out all broken, dead or diseased wood and found that there was not much more pruning needed. Where there were water sprouts we thinned them out to be two feet apart, and headed them back to half of the season's growth or more. In five years we have gotten some good new limbs, and good bearing wood from water sprouts pruned and headed back each year in this manner. What little pruning had been done before had consisted mainly of cutting the water sprouts from the main limbs as far as a man could reach. This produced long naked limbs with a tuft of bearing wood at the end. These limbs have a tendency to split and break more than shorter limbs with bearing wood all along. To correct the "mule tails" as I call the branches mentioned above, we preserve and train the water sprouts and in addition head
back and thin out the bearing wood from the outside to let sunlight into the center and encourage bearing wood inside to grow and make up for wood taken from the outer ends of the branches.

I am not in favor of dehorning a tree, except in rare cases, but prefer one to go and study some old trees of the same variety if possible.

In the beginning, I said, this is a flat, loamy farm except for one distant field of clay knolls and hollows, this is a good general description of the soil, but it would not have been accepted five years ago. Generations

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TWENTY YEAR OLD BALDWIN TREES USED IN AN EXPERIMENT WITH IRON SULPHATE

Tree No. 1—An illustration of “mule-tail” branches, vase-shaped, hollow centre and crotches. Tree No. 2—Central limb and spirally placed lateral branches, no crotches and bearing wood nearer the centre and better distributed.

to cut and shape a little each year and accomplish the result without a severe shock to the tree or the loss of any crop of fruit. This pruning followed by intensive cultivation naturally produced a heavy growth of water sprouts, and now our pruning consists mainly of cutting out limbs that have broken under heavy crops and thinning and training water sprouts in the way they should go. The pruning of old trees is the best training for pruning young trees; knowing how a tree grows when left to itself, we can prune a young one according to its nature. Going on this principle, I have not followed the plan of the vase shaped tree with a hollow center so much used in the West, but with most varieties trained for a tree with a strong center and lateral branches coming off one above the other in a spiral to avoid crotches. Before pruning young trees I would always advise

had taken crops away without giving much in return and the forty-acre lot once famed for its yield of hay, grain and potatoes was abandoned to quack grass and so devoid of humus that sand was a better term to apply than loam. It was dry. The effects of summer drought were to be seen there first and lasted longest. The corn and potatoes I planted there were hardly worth harvesting. I learned my lesson in one year—that is my consolation for the mistake I made of trying to crop the orchards on that starved land. The labor of fitting, planting, care and harvesting has since been given to the trees and the orchards are now plowed shallow, with a three gang plow in one-third the former time and cultivated with a big Forschner L. D. harrow at the rate of 25 acres a day, every week, which produces a fine seed bed for the cover crop which is put in just after a rain
in July or August, depending on the season and the amount and condition of the fruit on the trees. The cover crop was quite a problem at first; buckwheat and rye seemed to be the only things that would catch, and they did not grow well, but each cover crop plowed under is a prelude to a better one to come after, and now we sow buckwheat, rape, vetch and either rye or oats and it always makes good growth.

It is a satisfaction to compare the soil, dark and rich in humus now with the dry sand of five years ago. To kick up moist soil, where it used to be dry as far as you could go, to see the fruit and foliage keep green and growing and show no effect from the summer drought, where at first the leaves and fruit looked dry and would not put on size.

When you realize how much of our tree and fruit is water, you can see why I want to make the soil as spongy kept them so, which means lots of work with a one horse plow and many unavoidable injuries to the trees. Now we are trying the new plan of leaving five feet on each side of the row in mulch and only cultivating the centers. This is a great saving in labor and tree injury, and I think will bring as good crops as all clean cultivation.

On the young trees the reverse is the case. We keep the tree rows cultivated and seed down the centers to hay or clover crop, concentrating as much labor as is profitable on growing the trees and as little as we can on the secondary crops.

We have been fairly successful in getting a fairly uniform yield from all the trees each year, which I much prefer to a heavy crop every other year. We have had no trouble getting pickers to pick the crop, but our main trouble is packing and marketing. If feel that if I grow

with humus as possible to hold the excess water of the spring for the lean dry spells in summer.

It is quite a problem how much, and where best to spend the time and labor on a farm and it takes experience and lots of figuring to work out the problem. In the older orchards we plowed the tree rows clean and and produce the crop, some other man ought to pack and sell it, it is hard for one man to do both and do it well. However, we tackled the proposition and are slowly learning that end of the business. We started as usual the first year by picking a few pears and piling them on the ground; I knew better, but was busy building

THE APPROACH TO ORCHARD HILL
a packing table and so let the pickers get ahead. A shower came up with plenty of wind to blow the dust around and those pears were a muddy mess. Since then everything has gone directly from the tree to the table and then into the barrels and away; or else in barrels to be stored and sorted later, but never to be sorted from piles on the ground.

Every year we have the same trouble getting the fruit sorted and packed correctly and are still in a state of evolution, but some day we will work it out as we have other things, and hope to have a well balanced, smooth running factory, producing apples and pears and delivering them to consumers with profit and pleasure to both.

WHAT SCIENCE IS DOING FOR THE FRUIT-GROWER

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WHEN the editor of The Countryman requested an article on what science has done for the fruit-grower, he probably had in mind the results of experiments directly concerned with phases of fruit culture. The number of scientific experiments directly concerned with fruit-growing that have been conducted long enough to gain conclusive results is rather small if we do not include those concerned with combating insect pests and fungous diseases. However, no discussion on this subject can be adequate that does not recognize the contributions to practical fruit-growing that have been made by men working in pure science, generally with little consideration of immediate practical results that might follow their work. Practically all experiments concerning fruit culture, that have any appreciable value, make use of this fundamental knowledge previously worked out by scientists.

Thus, in the case of spraying, while discoveries of useful methods of applications have been made by both practical men and experiment station workers directly interested in problems of the fruit-grower, the great contributions that have made our spraying system possible came from scientists who have studied fundamentally the organisms against which we spray. In the same way experiments with cultivation and fertilization of orchards can not be usefully interpreted without bringing to bear large numbers of facts concerning plant growth that have been discovered by scientists. Results of experiments with cold storage may appear simple enough when explained by men who have done the investigations, and yet none of the experiments could have been planned to give the useful information that has been secured from them except by making use of a knowledge of the respiration of plant tissue, and other facts concerning plant life that have been made available through the work of fundamental scientists. Thus, all plant science is related, and no results of experiments concerning practical methods of fruit-growing can be usefully interpreted except by making use of very many scientific facts.

Some of the experimental results of immediate application to fruit-growers, so far as they can be discussed within the scope of so brief a paper, follow.

The relation of the different fruit crops to climate is of great importance. Thus, in the case of the peach, reasonably careful observations have shown that we may expect killing of the buds in winter when the temperature goes as low as -10 to -12 F., and in sections where records show that such a temperature may be reached in any large percentage of years, peach growing would not be safe. Results of observations from weather bureaus, etc., show that since the cold air is the heavier and settles we may expect the coldest places to be low places in any given locality, and back of wind breaks, etc. Thus, it is a general
rule on a still, cold night that the warmest places will be on the windward side of a hill. Where the prevailing winds during the cold period are likely to be from the northwest, the most protected position for an orchard, then, would be on the north-west slope of a hill or on the top of a hill. This is, of course, in cases where the location is not complicated by the presence of large bodies of water. These furnish by far the greatest protection from cold.

With regard to planting trees, while still many very exacting precautions are recommended by some authorities, experimental results indicate that the important considerations in planting are very few. It has been definitely determined that by planting young trees in the fall better growth the following season may be expected, this being possibly explained by the fact that root growth seems to continue very late, and that some root growth may be expected when the trees are set in the fall. Of course, this would not apply to sections far enough north that the trees recently transplanted would be injured by low temperature. With regards to methods of planting, the Woburn Experiment Station, at England, has learned that many of the precautions often recommended, such as cutting smooth wounds at the ends of the roots and straightening the roots at planting, etc., are of little importance. The very important considerations in planting are to have the soil around the tree pressed very firmly, and the tree set at approximately the depth it stood in the nursery, never more shallow, since this may result in winter injury at the crown, and never more than two inches deeper.

Of all phases of orchard practice, perhaps pruning has been least adequately studied. Concerning the whole question of shaping the tree, we have practically no experimental knowledge. With reference to the fundamental effect of cutting away large portions of the top of the tree in pruning, the Woburn Experiment Station has shown that this results in a dwarfing effect on the tree. Often trees that had been pruned heavily were found to be smaller after the first few years' growth, and came into bearing later than trees pruned very little at planting or afterward. Summer pruning has a greater dwarfing effect than winter pruning.

With reference to tillage in the orchard, results from the Geneva Experiment Station indicate that under average conditions tillage with a cover crop will give much better results than where the orchard is in sod, though perhaps in a few soils the sod orchards may give as satisfactory results as those having tillage. The Woburn Experiment Station seemed to find that grass in an orchard has an injurious effect that can not be explained, by the reduced moisture supply or reduced fertility. Where the moisture supply and fertility were of the best, still the grass had an injurious effect which may possibly be explained by injurious excretions from the roots of the grass.

This effect may be different in different soils and with different sod or intercrops. So these results seem to indicate the wisdom of extended experimenting to learn the effect of sod on trees with different soil conditions, and the effect on the trees of different crops grown in the orchard.

Concerning fertilizers for the orchard, the results of experiments seem somewhat contradictory. However, results certainly indicate that it requires a poorer soil to need fertilizers for trees than for grain crops in spite of the fact that chemical analyses seem to indicate that larger quantities of fertilizer materials may be taken away from the soil by the fruit crops. At the Geneva Experiment Station, trees in a reasonably fertile soil have shown practically no response to large applications of any form of fertilizer, although the same station seemed to obtain results from the use of nitrogenous fertilizers near Rochester, and the Pennsylvania Experiment Station has secured very marked beneficial results from the use of stable manure and from nitrogenous fertilizers, although results with other elements
seemed to be somewhat uncertain. While these results seem perhaps somewhat contradictory, yet it seems to me that they give a fruit-grower useful suggestions as to the best method of fertilizing his orchards. It seems highly probable that in a medium rich, clay soil, at least every other important phase of good orchard care should be attended to before fertilizers are used, and if the yields are rather large the grower may be reasonably certain that he is safe in omitting the use of fertilizers. While in very poor gravelly or sandy soils, if conditions are otherwise favorable for good yields profitable results may be expected from the use of nitrogenous fertilizers at least. Experiments certainly indicate that potash is of much less importance as a fertilizer material for orchards than it has been considered to be. The range of experimental error with trees is so wide that in all probability it will be a very long time before a grower with a soil that may be but slightly lacking in fertility can know whether or not the use of fertilizers would be profitable, and it seems very doubtful if the grower could determine this for himself unless his need for fertilizers is very evident. If he attempts it he certainly must expect to lay out several plots for each treatment, so that he can, in a measure, overcome the experimental error, and he must keep very careful records.

By far the largest contribution from science to the fruit-grower has been concerning the subject of spraying. In fact, the work of scientists has probably made fruit-growing on a long scale possible by determining methods of combating insects and diseases of the orchard.

With regard to storage of fruit, the experiments conducted by the Bureau of Plant Industry, of the United States Department of Agriculture, have greatly changed the methods of storage and the temperatures at which the fruit is held. At the present time, as a result of their work, the storage men recognize that the best temperatures for most fruits range from 30 to 32°F. Certain experimentors have also shown that in many cases profitable results may be expected from pre-cooling the fruit before it is placed in refrigerator cars. Interesting pre-cooling apparatus has also been worked out by the Department. This should not be considered as approaching an exhaustive survey of the work that has been done by scientific investigations for the fruit-growers. Only some of the more striking contributions have been mentioned.

The contribution of science to the fruit-grower certainly should not be measured by the results of finished experiments. Many scientific discoveries concerning plant life are not directly applicable to fruit-growing, yet they make possible the planning of experiments in a way that useful results may be obtained, and many such experiments are at the present time under way. Since the same practice will give different results on different seasons, experiments concerning practices in fruit-growing necessarily require long periods of time before conclusive results can be reached so perhaps the most valuable results for the fruit-grower will come from experiments not yet finished or from fundamental discoveries that will give more conclusive results by eliminating sources of error that would be overlooked but for such fundamental knowledge.

Then there is a mass of scientific knowledge available that may be applied to solve new problems that the fruit-grower may encounter. Thus, if a new insect pest or fungous disease makes its appearance present knowledge of such organisms could be applied in learning a means of control much more quickly than if such knowledge were not available. Such knowledge is also constantly being applied to prevent the introduction of such pests.

Scientific knowledge then is not only being constantly applied toward the solution of present difficulties, but it also serves as a sort of insurance against serious loss from new difficulties that may appear in the future.
NEW YORK has soils as poor in fertility as any in the world and soils as rich as any in the world. Its soils vary in texture from the lightest sands to the heaviest clays. Between these extremes of fertility and texture are all gradations. Sections of New York have a growing season of less than 100 days—shorter than parts of Alaska; other sections have a growing season of 200 days. Small areas of the State receive so little rainfall that they are almost semiarid. The annual rainfall in different sections varies from less than 25 inches to over 50; the rainfall for the 5 months, April to August inclusive, varies from less than 14 inches to twice that amount. Topographically the State includes both extremes, the rugged mountains of the Adirondack and Catskill groups and the gently rolling stretches, the beginning of the prairies, in the northern half of Western New York and all the intermediate phases. Some New York farms are located 15 to 20 miles from a flag station and 30 or more miles to a town with more than one barber shop, while 85 farms were reported by the last census in New York County, the center of the most densely populated section of the western hemisphere.

To meet profitably these widely different conditions many types of farming have been evolved.

The early settlers brought with them their seeds and their stock, their few crude implements and the methods and practices which had succeeded in their former homes. Immediately there was begun an experiment of greater proportion and complexity than any yet conducted by an experiment station. Each new settler took an active part, for the results were vital to him personally. It was an experiment to determine what crops and what varieties of each crop paid best on every farm that was cleared; to determine what methods of tillage and seeding were best; to determine what kinds and breeds of stock were most profitable under those particular conditions; and then to determine what combinations of crops and stock paid the farmer and his family best for their year's work. The settlers came from many different places and each one had different notions to try. Practically everything known at the time was tried and the things that succeeded endured—the others were discarded.

As population increased and markets developed, readjustment became necessary. Extensive building of railroads intensified the competition between different parts of the State and with other states. The invention of the mowing machine, the reaper and the self-binder necessitated changes in types of farming probably as extensive as would be caused by a 50 day lengthening of the growing season. Shifts in the relative prices of products, of land and of labor and various economic changes are continually requiring gradual readjustment of types of farming.

So the great experiment is continued and every farmer in the State consciously or unconsciously is helping to conduct it. Thousands of different ideas are tested every year. Any one proving profitable soon becomes common practice where it applies. Consequently the types of farming and the practices that are common in various sections of the State represent the accumulated experiences of several generations of farmers. The present generation is inclined to overlook the fact that these types of farming and practices are the result of accumulated experiences. It does not appreciate the years of labor spent in getting these
results; nor the great degree of accuracy that has come from the careful checking of results by hundreds of farmers year after year; nor the most important facts of all, that the results apply strictly to the local soil, the local climate, the local marketing facilities and all the other local conditions, and that they have been worked out strictly on the basis of real profit. The type or types of

of the charts published in the preceding articles of this series, particularly to the charts showing the average length of the growing season, figure 4 on page 103; the chart showing the New York rainfall for April to August inclusive on page 105; the chart showing the soil series of the State, page 22; and the chart showing the underlying rock types on page 19.

A NEGLECTED ORCHARD USUALLY MEANS THAT THE GROWING SEASON IS TOO SHORT FOR PROFITABLE RESULTS OR THAT OTHER CROPS, OFTEN POTATOES, FARE BETTER

Armimg, then, that are generally followed under any given set of conditions in this State or any of the older states may be considered the best, everything considered, for those particular conditions.

As students, however, we are not content to know that this type here and that type there are correct for their conditions. We want to know why they are correct—why each type has survived the test of time. Too often the presence of a certain type is attributed to "custom" or "habit" which explains nothing, except that the speaker does not know and that it is not always easy to explain. Many factors are concerned but the most important probably are climate, soil, topography, marketing costs and relative profits of competing enterprises. The best way, perhaps, to see how these factors determine types of farming is to study separately some of the different products. It will be desirable to refer frequently to some

Apples. Practically every farm in the State has some apple trees and it is safe to say that all the leading varieties have been tried under every condition of climate and on every type of soil in the State. But as most every one knows, the apple industry has developed extensively only in certain sections.

Table 1 shows where most of the New York apples were produced in 1909 and which counties had the highest average yields. In parallel columns is given the average length of growing season for each county or that part where most of the fruit was grown. A glance at the chart giving

1Comparison of 1909 yields with average climatic data for a series of years as in Table 1 and following tables is not good statistical practice. But average yields by counties are not available and the climatic data for 1909 alone would not be as valuable as the normal for the purposes of this article. Important variations from the normal are noted, however, and the writer believes that due allowances for such have been made in all statements.
TABLE I. APPLE PRODUCTION IN NEW YORK AND LENGTH OF GROWING SEASON.

<table>
<thead>
<tr>
<th>Counties with</th>
<th>Number of trees</th>
<th>Average length of growing season where grown, in days</th>
</tr>
</thead>
<tbody>
<tr>
<td>most apple</td>
<td>in nearest</td>
<td></td>
</tr>
<tr>
<td>trees, 1909</td>
<td>thousand</td>
<td></td>
</tr>
<tr>
<td>WaynE</td>
<td>812</td>
<td>165-175</td>
</tr>
<tr>
<td>Niagara</td>
<td>804</td>
<td>160-170</td>
</tr>
<tr>
<td>Monroe</td>
<td>703</td>
<td>160-175</td>
</tr>
<tr>
<td>Orleans</td>
<td>550</td>
<td>160-170</td>
</tr>
<tr>
<td>Erie</td>
<td>473</td>
<td>150-165</td>
</tr>
<tr>
<td>Ontario</td>
<td>369</td>
<td>160-170</td>
</tr>
<tr>
<td>Dutchess</td>
<td>303</td>
<td>160-170</td>
</tr>
<tr>
<td>Genesee</td>
<td>301</td>
<td>145-155</td>
</tr>
<tr>
<td>Columbia</td>
<td>298</td>
<td>160-170</td>
</tr>
</tbody>
</table>

Counties with highest yields per tree, 1909

<table>
<thead>
<tr>
<th>Counties with</th>
<th>Average yield</th>
<th>Average length of growing season where grown, in days</th>
</tr>
</thead>
<tbody>
<tr>
<td>highest yields</td>
<td>per tree</td>
<td></td>
</tr>
<tr>
<td>per tree, 1909</td>
<td>in bushels, 1909</td>
<td></td>
</tr>
<tr>
<td>Wayne</td>
<td>4.1</td>
<td>165-175</td>
</tr>
<tr>
<td>Orleans</td>
<td>4.1</td>
<td>160-165</td>
</tr>
<tr>
<td>Monroe</td>
<td>3.7</td>
<td>160-175</td>
</tr>
<tr>
<td>Columbia</td>
<td>3.0</td>
<td>160-170</td>
</tr>
<tr>
<td>Niagara</td>
<td>2.9</td>
<td>160-170</td>
</tr>
<tr>
<td>Ulster</td>
<td>2.8</td>
<td>170-180</td>
</tr>
<tr>
<td>Dutchess</td>
<td>2.6</td>
<td>160-170</td>
</tr>
<tr>
<td>Ontario</td>
<td>2.5</td>
<td>160-170</td>
</tr>
<tr>
<td>Putnam</td>
<td>2.5</td>
<td>160-170</td>
</tr>
</tbody>
</table>

Length of growing season shows that all these counties, excepting Genesee, are adjacent to large bodies of water and that all have growing seasons ranging from 160 to 180 days, excepting Erie and Genesee. These two counties had somewhat shorter seasons, 150 to 170 and 145 to 155 days respectively. They were among the counties with the most trees, but were not among the counties with highest yields. The average yield of Genesee County was 1.9 bushels per tree and of Erie 1.3. Evidently the length of the growing season is a very important factor in apple production. No county with a season much shorter than 160 days had a high average yield or many trees.

The chart of April to August rainfall shows that these counties included those of lightest as well as heaviest rainfall. But the best yields were secured with not over 18 inches of rain in the growing season, in Wayne, Orleans and Monroe counties. They were approximately 40 per cent better than the yields in the Hudson Valley counties with 18 to over 20 inches of rain. Too much rain may interfere with pollination and encourage disease pests.

An interesting fact is the marked effect of rainfall on orchard tillage practices. In Western New York with comparatively low rainfall clean cultivation is practiced quite generally and experiments as well as experience have proved that it pays. But in the lower Hudson Valley orchard districts where the rainfall for the growing season averages from 18 to over 20 inches a much larger proportion of the orchards are in sod. Higher priced hay is partly accountable for this but the principal reason
is that, usually there is sufficient moisture to make conservation by tillage less necessary. Geneva, New York, Bull. 375 describes a comparative test of clean tillage and the sod mulch system of Mr. Grant Hitchings conducted on Mr. Hitchings' farm in south central Onondaga County. After thorough trial, the results were a slight difference in yield and considerable difference in cost, both in favor of the sod mulch system—a striking contrast to the usual results in Western New York. But Mr. Hitchings' orchards receive from 20 to 30 and sometimes 50 per cent more rain than those in Western New York.

The best apple yields came from the best soils of the State, the Ontario and Dunkirk series in the lake counties, but the high yields were probably due as much to the very favorable climate as to the soil. The lower yields in the Hudson Valley counties were due partly to poorer soils.

The present day yields and the accumulated experiences of our forefathers as evidenced by present location of our apple industry indicate very clearly that the best locations in this State for apple production are where the growing season is at least 160 days long, where the rainfall is from 14 to 18 inches during the growing season and where the soil is deep and fairly strong. The extensive planting of orchards in such locations is also evidence that apples have paid better there than other crops which compete with them for labor and land. The marketing costs from New York apple sections are probably as low as, or lower than from any other important apple section of the United States. All these facts explain why apples occupy a prominent place in the types of farming of these regions.

But in other sections of the state where the climate is different apples are less important and must be so because of lower yields, higher costs of production and competition with other crops better suited to the climate. To try to stimulate apple production in sections not climatically adapted to the crop is a serious mistake. Cortland County, for instance, with a growing season of only 130 to 140 days and heavy rainfall can never hope to make as much money from apples as Orleans County, or even as much from apples as from potatoes and cabbage to which its climate is well adapted. These remarks apply to whole communities. It is recognized, of course, that certain farms here and there, by some twist of natural forces (or the imagination) will be blessed with an apple climate. But too often, out-of-type farms, like apple farms out of the apple regions, are pointed out as examples of what the community should take up. In most cases those same farms would make more money if devoted to crops better suited to the local conditions and handled with the same intelligence and interest.

Potatoes are grown all over the State but the yields per acre vary widely, the highest county average for 1909 being almost three times greater than the lowest. Table 2 shows the counties with highest average yield in 1909 and the climate of each.

<table>
<thead>
<tr>
<th>Counties with highest average yield in 1909</th>
<th>Yield per acre, 1909, in bushels.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franklin</td>
<td>197</td>
</tr>
<tr>
<td>St. Lawrence</td>
<td>162</td>
</tr>
<tr>
<td>Clinton</td>
<td>155</td>
</tr>
<tr>
<td>Lewis</td>
<td>153</td>
</tr>
<tr>
<td>Queens</td>
<td>152</td>
</tr>
<tr>
<td>Cortland</td>
<td>151</td>
</tr>
<tr>
<td>Wyoming</td>
<td>148</td>
</tr>
<tr>
<td>Jefferson</td>
<td>143</td>
</tr>
</tbody>
</table>

The highest average yield, Franklin County, was produced mainly in a sec-

<table>
<thead>
<tr>
<th>Counties</th>
<th>Average length of growing season where potatoes are grown</th>
<th>Rainfall April to Aug. inclusive, in inches.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franklin</td>
<td>130-150</td>
<td>17</td>
</tr>
<tr>
<td>St. Lawrence</td>
<td>130-150</td>
<td>15</td>
</tr>
<tr>
<td>Clinton</td>
<td>130-150</td>
<td>14</td>
</tr>
<tr>
<td>Lewis</td>
<td>120-140</td>
<td>19</td>
</tr>
<tr>
<td>Queens</td>
<td>120-140</td>
<td>15</td>
</tr>
<tr>
<td>Cortland</td>
<td>120-140</td>
<td>15</td>
</tr>
<tr>
<td>Wyoming</td>
<td>120-140</td>
<td>15</td>
</tr>
<tr>
<td>Jefferson</td>
<td>120-140</td>
<td>15</td>
</tr>
<tr>
<td>Suffolk</td>
<td>120-140</td>
<td>15</td>
</tr>
</tbody>
</table>

1 New York County omitted because of very small acreage.
tion that has a cool growing season, normally 130 to 150 days in length and an average rainfall of about 17 inches (16 inches in 1909) in the season. Evidently such climate is best for potatoes in this State because shorter or longer seasons or less rain resulted in lower yields. Lewis, Cortland and Wyoming counties, for example, had about as much rain as Franklin but because of a shorter season had considerably lower average yields. The potato districts of Franklin, St. Lawrence and Clinton counties have about the same soil and growing season, but texture and chemical analysis seem to make little difference in the yield. The sections in this State that offer the most favorable climate and have very good yields, in many cases have soils of very low fertility.

Potato spraying and fertilizing practices show very close relationship to climate and prices, in fact closer than do the usual recommendations. The usual application of fertilizer to potatoes on Long Island is 1000 to 2000 pounds per acre; in Franklin County 300 to 600 pounds; in Monroe County 200 to 300 pounds.

The areas in this State that offer the most favorable climate and have very good yields, in many cases have soils of very low fertility. Potato spraying and fertilizing practices show very close relationship to climate and prices, in fact closer than do the usual recommendations. The usual application of fertilizer to potatoes on Long Island is 1000 to 2000 pounds per acre; in Franklin County 300 to 600 pounds; in Monroe County 200 to 300 pounds. What are the reasons for the differences? Is it just "habit"? Are the farmers wrong in two of these sections? Or do the following facts explain the enigma? Long Island has heavy rainfall, highest prices for potatoes and soil poorest in plant foods but nearly ideal in texture for this crop. Franklin County has medium rainfall, much lower prices for potatoes and soils of medium fertility. Monroe County has light rainfall, prices of potatoes about the same as Franklin and most fertile soils. Apparently these facts do explain. On Long Island fertility is the limiting factor. There is enough rain to make available the heavy applications of fertilizer and potato prices are high enough to pay for them. Monroe County and the counties west lack rain for best potato yields and fertilizers cannot help much. Franklin County can use more fertilizers than

Proximity to markets makes potatoes important there though the climate is not the most favorable. High prices and plenty of rain make heavy fertilizing profitable. Bordeaux spraying is more important there than in cooler climates.
Monroe to advantage because of a better climate but the price of potatoes is not high enough there to justify as heavy applications as made on Long Island.

Spraying potatoes with bordeaux mixture is a very common practice in Long Island potato sections. A comparatively hot season with plenty of rain favors blight. And after putting on that 1000 to 2000 pounds of high grade fertilizer Mr. Grower is likely to do all he can to get his money back, so he sprays. In the potato districts of Franklin and adjacent counties very little bordeaux mixture is used. Where the vines are so green and vigorous at digging time that it is impracticable to use a machine, there is certain to be not much loss from blight. This is usually the condition in the best of those potato sections. Cool seasons and excellent air drainage on the St. Lawrence and Champlain slopes afford protection. In the western part of the State some spray and others do not, depending on how important the crop is to them —how much money and labor have been invested. Spraying with bordeaux there is like insurance—a good thing when there is a possibility of losing quite a little.

Level and hill culture of potatoes, and varieties will show equally close relationship to soil and climatic conditions to those who are observing.

But these counties with the most favorable potato climate and high yields do not grow the bulk of the New York crop. Other factors besides climate are concerned. It happens that a good potato climate is also a good hay climate, and hay is probably the most profitable New York crop for the labor concerned when grown on the moderate priced land in the upstate counties. On the higher priced Long Island land, potatoes have to compete with all kinds of truck crops. Consequently potatoes do not have a monopoly of the land or the labor in these sections and even if they did, the area would not be sufficient to supply the demand.

Table 3 lists the counties that had the largest acreage of potatoes in 1909. Size of county, of course, influences this selection to a certain extent but not enough to mislead us in seeking the real explanations. The first clue

<p>| Table 3. New York Counties with the Largest Acreage of Potatoes in 1909 |
|------------------|------------------|------------------|</p>
<table>
<thead>
<tr>
<th>County</th>
<th>Acres of potatoes in nearest thousand</th>
<th>Yield per acre, 1909, in bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steuben</td>
<td>31</td>
<td>107</td>
</tr>
<tr>
<td>Erie</td>
<td>24</td>
<td>128</td>
</tr>
<tr>
<td>Monroe</td>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>Suffolk</td>
<td>15</td>
<td>143</td>
</tr>
<tr>
<td>Ontario</td>
<td>15</td>
<td>111</td>
</tr>
<tr>
<td>Onondaga</td>
<td>14</td>
<td>121</td>
</tr>
<tr>
<td>Allegany</td>
<td>13</td>
<td>122</td>
</tr>
<tr>
<td>Livingston</td>
<td>11</td>
<td>129</td>
</tr>
<tr>
<td>Washington</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>Rensselaer</td>
<td>10</td>
<td>114</td>
</tr>
</tbody>
</table>

Average length of growing season: 150-160 inches, 1909 Normal. Large cities in or near the county:

- Buffalo
- Rochester
- Syracuse
- Troy, Albany

is the fact that all the big cities of the State are in or near certain of the counties listed. It looks as if proximity to the cities were a strong inducement and it undoubtedly is. The weight, and hence the cost of transporting potatoes is higher in proportion to their value, than that of most farm products. The saving of this cost is often enough to warrant growing potatoes near market in competition with better producing sections farther away. And so it is that Suffolk and Monroe counties, influenced by the New York and Rochester markets, are important potato producers although not favored climatically. Erie, Onondaga and Rensselaer counties influenced by the Buffalo, Syracuse and Albany and Troy markets respectively, and with climates not entirely unfavorable to the crop, are likewise important.

All the other counties in Table 3 have fairly good climates for potatoes. Steuben might have been in the high yield class in 1909 if the rainfall had been normal.
In Steuben, Allegany, and Washington counties another factor supplements the climate. It is lack of competition. The seasons are too short for apples, beans and corn; the seasons are too short and the soil not right for hops; it is the same with tobacco except for small areas in Steuben; and markets for truck crops are lacking. These crops are the chief competitors of potatoes.

In Ontario and Livingston counties potatoes have to compete with corn and beans and with apples to a certain extent. Parts of these counties have especially good potato soils—the lighter types of the Dunkirk and Ontario series. On these, potatoes have an advantage over their competitors. In both counties, however, the crop is less important than one of its competitors, corn in Ontario and beans in Livingston.

Competition between potatoes and apples for labor at harvesting time is very keen. The heaviest part of the work on both crops comes at harvest; and in New York both are harvested about the same time. Different climatic requirements keep the two crops well apart but when other factors bring them together as in Monroe County, the general practice is to grow potatoes on one farm and apples on another. Large areas of both crops are seldom found on the same farms. The labor congestion is likely to result in excessive labor costs or loss of part of the crop.

The combined effect of all the factors has been to make the potato crop an important feature of the types of farming, first, in sections where the climate is favorable; and second, in sections with less favorable climates where either nearness to market is an inducement or lack of competing crops gives potatoes first place in its class. To a limited extent potatoes are conspicuous also on especially good potato soil even though climate is not the best and competition is keen with crops better suited to the climate.

To be continued.

SOME FACTORS IN THE PROPAGATION OF NURSERY STOCK

Samuel Fraser

We have been propagating nursery stock in a commercial way for some years and have attempted in a small way to try to find out some of the causes of variation. Much has been said at various times as to the value of propagating from trees of good performance. On the face of it, it looks a plausible theory. We have horses, cattle, and sugar beets propagated on performance records and even timothy at the present time. Why not fruit trees? Why not take our buds for the propagation of our nursery stock from a strong, healthy, vigorous individual because he could usually cut a much stronger bud. There is no one who recognizes the importance of a strong bud more than the man who is budding, and a careful budder of nursery stock will sometimes throw away 50 per cent of buds on his bud stick because they do not appeal to him as desirable. How much of this is founded on truth and how much notion I am not prepared to say. Some men seem to be much more impressed with the character and size of the bud than others, and some nurserymen contend that the difference between a good stand and a poor stand depends upon the number of
buds which the budder rejected and how he handled those he cut. Whether the details embraced in budding influence only the stand and the growth made in the nursery or whether its influence is transmitted through life is not known. Whether a bud taken from part of the stick makes a big tree or whether a bud taken from another end of the stick makes a small tree is unrecorded, some believe it does, but there is one interesting fact which must be remembered and that is we may propagate a Baldwin or a McIntosh on three different types of stock, say the Paradise, Doucin and the French Crab. The one is a small dwarf tree, the other one is medium size and the other will develop into quite a large sized tree. There is a wonderful difference in the size which these three individual trees may attain, but there does not seem to be any marked difference, we may say none at all in the fruit borne by them. A few have contended that the dwarf trees would come into bearing somewhat earlier. This might be granted and it may be so for in some cases they do, but there is no marked difference in the fruit itself. We have no variation occurring to a marked degree. Neither have we in cherries any difference in the fruit of a variety when grown on Mahaleb and Mazzard roots or even in pears on pear and quince roots, at least I do not know of any.

Probably all are familiar with the work of Dr. Shamel in California where he found that among lemons, oranges and grape fruit, especially in the Navel Orange which is a relatively recent introduction in California, there are at least seven variant types. These types represent all shades of profitableness to the orchardist. One type is practically worthless, another type is extremely valuable and there are trees of different degrees of value between; also it is his idea that individual differences of the fruit are perpetuated, and that buds taken from the unproductive tree will reproduce unproductive, strong-growing, but worthless trees far as profit is concerned. Also when these unprofitable trees are cut back and the branches are top worked to the profitable tree, the story is entirely different, the tree becomes profitable. This adds a certain amount of zest to our investigation as to whether this is true of oranges, lemons and grape fruit only. Dr. Shamel believes that he has isolated three or four distinct variable types in Elberta peach while working on this problem in New England and that these different peaches could be reproduced in exactly the same way the oranges are being reproduced in California. If it is true of oranges and other things why is it not true of apples, pears, peaches, in fact, all our fruits? We have currant bushes which have borne 20 and 21 pounds of fruit in a year at five years of age. Would these be more desirable to propagate from than a currant bush which bore 8 pounds or 10 pounds? In other words, would you rather have bushes propagated from bushes which are heavy producers or from poor producers, knowing that the ability to reproduce may have been due in part to the relative positions of the plants? But when we come to bushes and plants in which the relative positions do not seem to be the controlling factor it then becomes the part of research to see whether these individuals will perpetuate themselves and this is the most important part of the work. The difficulty surrounding it is that it is a very slow proposition. There is nothing to be secured under twenty years, especially in the case of apples. It will take a term of years after the trees come into bearing to determine whether they are going to reproduce their parent. It will also take a term of years to show what the parent is capable of doing. Realizing that no harm would be done by working from individual trees and that the purchasers of the trees would suffer no loss by having individuals propagated from individuals of merit, so far as they appear, we have felt it might be worth while to undertake to find out something about the problem. The
work has been of interest and the results suggestive, although we have not yet secured enough evidence in regard to the ability to transmit productive power to draw deductions. We have found that certain trees would not reproduce a sufficient quantity of first class individuals to warrant their being continued in the nursery. In other words, some trees do not seem to be able to produce as strong growers as others. It may be all the difference between 20 and 40 per cent of trees 4 feet and upward in height in the first year, or 100% variation. This continued is a very important item to us because at the present time the purchaser of trees wants wood and if we can give him six feet of wood in a one year old, he would much rather have the tree six feet tall than one which was three. In the same way the purchaser would much rather have a tree three-quarters inch thick when two years old than one five-eights inch, and if we find individuals which will grow 40 per cent in the block three-quarters inch while another tree can produce only 20 per cent of three-quarters inch we are forced to grow the one which will give us the larger proportion. This difference seems to be transmitted through three successive generations even when reproduced through nursery stock; that is, in order to see whether it would be maintained for three successive generations,

"ONE OF OUR HEAVY PRODUCING R. I. GREENING TREES WHICH PRODUCED 14 BARRELS AND BORE FOR SEVEN CONSECUTIVE YEARS VARYING FROM 4 TO 14 BARRELS PER YEAR"

we have taken our buds from the strongest individuals in the nursery row. For instance, we find that 3.21 which is the number of a Spy tree in one particular orchard, even when reproduced through the nursery stock three times is giving a larger number of number one trees in 1914 than any other and holds the same position in regard to two other trees that it did in 1910. The same way, our best growing McIntosh in 1910 is still our leader in 1914; it will reproduce more strong-growing trees than any other tree number. One Bosc tree of which
we secured a limited number of buds has proven to be a much stronger grower than two other Bosc trees. All three of these trees which constitute our foundation stock produce high quality fruit and it was of interest to us to determine which of these would give us the finest and strongest trees, since both individuals seemed alike in regard to the fruit itself. One of them is so much stronger grower than the other that for commercial purposes it is the only one to grow. For in-

In propagating Bartlett Pear our main effort has been to secure the buds from strong-growing individuals which have no appearance of red wood. Red wood is one of the serious factors and we are not sure as yet whether the propagation from individuals which appear to be free from it will be the controlling factor or not.

Of course, in our work we are budding seedlings, which in themselves are probably representative of all

![A WELL CARED-FOR NURSERY](image)

Row — A — A very uniform row of Wealthy, shown as whips. The following year nearly every tree was $\frac{3}{4}$ and No. 1.

stance, out of one row of 500 trees, 80 were eleven-sixteenths inch in the one case, whereas out of 1500 trees from the other source we could find but fifteen of this grade, and this variation in strength of growth is maintained in the second size, namely the five-eights inch; these being the grades which we make. In Rhode Island Greening we are propagating from ten individuals, in Baldwin, 14; in McIntosh, 5 and so on. In Oldenburg we found that three trees which are in the orchard of Collamer Bros. at Hilton, which were top-worked by their father, gave us stronger growing individuals in the nursery than the buds secured from two other sources, and they were so much stronger that we have practically no others at the present time.

shades of difference so far as growth is concerned. Among apples and pears some are spiny and some are smooth; some have large root systems and some have small, but we grade all of the strong-growing seedlings together and plant them out. Some may make a good union with the variety and others may make a weak union, and it might be that the weaker union produced the weaker-growing tree, whereas the relative merits of the buds put on the stock were the same. The more we look into the question the more complicated it becomes, and at the present time to state that any given factor is the cause of differences would be, practically speaking, preposterous. But in the nursery where we work with thousands of trees there is a strong
possibility that the different variants are distributed somewhat uniformly, and that, if sufficient numbers be used, these differences in the roots may be overcome so that the results may be comparable.

At present our aim is to see if we can get rid of the differences in vigor by propagating from the strongest growers in the row. In other words, in the Bosc trees we have cut buds from the strongest trees in the nursery row for three generations and this year have budded 6000 trees from each source and in addition have injected a new supply from some strong growing bearing trees as checks. The plants are three rows wide and comparable. If we can repeat the performance under these conditions we shall feel that there is something in it. We are reproducing our apples in the same way. For business it does not pay to propagate from heavily bearing trees because we cannot make as large growing trees in the nursery from such buds as one can secure by working from nursery stock. For instance, a man would go into bankruptcy at the present time if he should undertake to propagate peaches and apples entirely from bearing stock unless young strong growing bearing trees not heavily laden be available. If one uses buds from mature bearing trees the results will likely be 30 per cent off in size and this is sufficient to handicap the business seriously. The only thing to do is to grow a block which we can save for propagating purposes and then from time to time go back to the fountain head. If these are young, that is, anything up to ten or fifteen years old in apples it is probably just as good to take wood from such as from nursery stock, but this is not true of peaches. In peaches, a bearing tree of five will not give one nearly the wood or the vigorous growth that could be secured from a young tree in the nursery row. At the present time all our nursery stock is on the wood basis, whether the trees are propagated from bearing trees or not is not a factor. The size of tree sold is the important consideration to the orchardist buying nursery stock and in this respect the nurseryman tries to do his part and give us as much wood as possible for the money. We aim to propagate from vigorous bearing profitable trees in the orchard which will give us a large percentage of No. 1 trees in the nursery row.

SUGGESTIONS TO TEACHERS OF FRUIT-GROWING IN THE HIGH SCHOOLS

C. S. Wilson, ’04

Professor of Pomology, New York State College of Agriculture at Cornell University

The work in fruit-growing that is presented in the high schools of New York State is a subject that is just receiving careful consideration. This work will develop rapidly in the future, and it is important that the teachers understand more clearly what topics should be presented and what points under each topic should be emphasized.

A careful study of many high school courses in fruit-growing in different states impresses one with the fact that the work is too broad and comprehensive to be thorough. Generally the topics outlined cover the entire field of fruit-growing, and often it is recommended that the work be given in one term. These same topics given in the outlines require two years’ work in college. Naturally, the results are unsatisfactory. Instead of fixing a few facts clearly and lastingly on the mind of the student, a dim impression of many facts, generally much confused, is the result. The teacher has failed not only to convey accurate information, but also to train the student’s mind.

It is not surprising that these con-
ditions exist. Many of the educators who prepare these outlines, and many of the teachers who do the instructing, are graduates of agricultural colleges. Their training in fruit-growing is based on college courses, and it is natural, therefore, that they should copy somewhat from these courses. Such imitation is all right, provided the subject matter is reorganized to meet the needs of the high school student. Generally, however, too little attention is given to careful reorganization and adaptation. A few points are emphasized here in this connection.

1. The high school work should confine itself to verified facts that are beyond all doubt, or to accepted practices, in cases where insufficient experimental data have accumulated to establish facts. In such cases, discussion of the theory underlying these topics may lead to several different conclusions. Such discussion is a part of college training, but it should generally be omitted in high school work. A good illustration of this point is found in the question of fertilizers for fruits. Considerable experimental work has been done, but results do not seem to coincide, and in some cases appear to contradict. The high school work in fertilizers, therefore, should be a statement of the practices accepted by the progressive growers and should go no further.

2. Topics selected for study in high school should direct the attention and interest of the student to things that are, and can be, done on the farm, that is, they should relate the student to farm life. The work should be planned so that the topics may be taken up in season as much as possible. Outdoor studies should be made in connection with the classroom exercises. To illustrate, the study of fruit buds should be planned for the spring so that the students, after receiving their preliminary instruction, may be taken out to the orchard and shown fruits in blossom. Attention should be called to the fact that the fruit bud of the peach produces a blossom only, and that this bud always appears on wood of the previous season's growth. Similarly, attention should be called to the fruit bud of the apple, which produces not only several flowers but also leaves and is located on lateral fruit spurs. An examination of the topics given under the main head pruning, as outlined below, shows that the topics recommended for use in the high schools are related directly to the work on the farm. Of course this direct relation is not always possible, but it should be emphasized more often than it is.

3. Strictly college work should be omitted in high school courses. It is true that no definite line can be drawn separating high school and college work, but a much more definite distinction can be made than is made at present. To illustrate this point as well as the two points mentioned above, an outline of one of the subjects dealt with in fruit-growing is submitted herewith. This subject is considered as a whole, and is divided into the different topics that would be presented in college. The topics that are suitable for use in high school are italicized.

**PRUNING**

**Definition**

**Statement of purpose**

**Preliminary studies**

1. **Buds**
   - (a) **Kinds**
   - (b) **Morphology of**
   - (c) **Factors influencing formation, differentiation, and development**
   - (d) **Distribution of fruit and leaf buds on wood of different ages (all fruits)**
   - (e) **Markings (spur and branch)**
   - (f) **Fruit spurs**

**Physiological principles fundamental to pruning**

**Experimental work and consideration of results**

**Root pruning**

**Experimental work and statement of practices**

**Time to prune**

1. **Summer:** Effects
2. **Winter:**
Head formation
1. Height of head
2. Open or closed center
3. Pruning of fillers

Cuts
1. Small branches
2. Large branches
3. Dressings
4. Healing

Statements of practices:
1. Apple
   (a) Young tree (b) Mature tree
2. Pear, quince, peach, cherry, plum, apricot (same as for apple)
3. Grape
   (a) Methods
   (b) Young vine
   (c) Mature vine
4. Raspberries
   (a) Life cycle of canes
   (b) Statements of practices
5. Blackberry, current, gooseberry (same as for raspberries)

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ADVERTISING THE APPLE

By D. S. Hatch, '15

EDITOR'S NOTE—This speech was awarded first prize at the annual speaking contest of the New York State Fruit Growers' Association.

As just a boy back there in the Upper Hudson Valley, at the time when I first began to take a business-like interest in the home farm, I remember, as one of the very few things that worried me then, this—that sometimes in the fall, when the trees in the orchards hung full of beautiful, ripe, red and yellow apples, my father would say, "The prices are so low this year, those apples are not worth picking." I have just been home for a vacation. The bins and barrels in that same old cellar are full of large first class apples; and if sold at all they must go at the ridiculous price of about sixteen cents a bushel.

According to the definition of our leading economists whenever the demand for a commodity is not great enough to sell it above cost there is over-production. The two reasons for this condition in the apple world are, first, the enormous acreage of young trees coming into bearing, and second, the fact that the people are not eating apples as they formerly did; while at the same time oranges, bananas and grapefruit have, through the aggressive, organized advertising methods of their producers, have by leaps and bounds, captured the appetite of the consumer. Many of you remember when oranges were given as Christmas presents, so rare were they. Over one hundred thousand more carloads of oranges were used in this country last year than twenty years ago. Bananas and grapefruit have made like gains at the expense of the apple. I have no desire to exaggerate the dangers of over-production, there is no need for it. Even the more optimistic of you apple men who believe there will always be sale for all the apples, even you, agree that in years of a big crop the prices are likely to be discouragingly low; agree that there will be, in that sense, over-production.

All men agree likewise to my second point—that the remedy for these conditions lies in increased consumption. And the hopeful thing about it is, consumption can be increased—increased, just as the consumption of oranges, bananas and grapefruit has been increased, through organized publicity methods, just as the use of any other commodity is increased through advertising. If advertising makes thousands of people dope themselves with patent medicines, will it not encourage them to eat more apples? If advertising sells chewing gum by the large box, and sets people's jaws wagging all over the world, will it not sell apples? If advertising has made enormous mail-order firms, will it not remake apple supremacy? We are going to advertise the apple in the
daily and weekly press of the country just as grape juice and breakfast foods are advertised. At least ten persons drink grape juice to-day where one did before it was advertised. Where would breakfast foods be if they were not advertised? We are all familiar with the negro in his white cap, as he serves breakfast food. Shredded wheat is known from its advertisement and used in enormous quantities. Over in the countries of Europe, breakfast foods are as yet little advertised, and practically unknown in use. But over there we see American brands of pickles advertised in the cars and public places, and the whole "57 varieties" are used in large quantities.

Back in Ithaca, my last Saturday night there, riding up the Hill toward the University, in the street car I read an illustrated sign something like this: "At the close of a day's work, a glass of refreshing beer," and I thought how I would like to change that sign to read, "At the close of a day's work, a Tompkins County King."

That sign paid or it would not remain there. Likewise are paying the beautifully illustrated car signs, which the Northwestern Fruit Exchange and other concerns are using to advertise their apples. The cars of the subways and elevated lines in New York City, displaying these signs, carry over two and one-half million people a day, a good sized audience! Likewise will pay all the other features of the nation-wide advertising campaign which our national apple advertising committee is pushing national Apple...
Day; the printing and distributing of hundreds of thousands of those attractive little apple receipt booklets “197 Ways to Cook the Apple,” and the encouraging of every day use of the apple through attractive articles in the leading periodicals setting forth its value as a food. Back at Cornell, the women in the graduate school of the Home Economics Department are making a series of experiments in cooking the apple, with the hope of producing dishes so tempting to the eater, that it will be possible to persuade the hotels of the country to give the apple a prominent and regular place on their menus. Our advertising committee has enlisted twenty-two thousand dealers in the large centers to work for a smaller profit on each box and barrel of apples sold and a consequent greater number of sales.

Have you seen that effective picture in two parts—on the one side an orchard with the ground under the trees covered with apples going to waste, and on the other side a row of city children, their noses pressed against the glass of a store window, looking longingly at baskets of apples marked with high prices within. Ladies and gentlemen, the children of this land would almost eat its apples if given a chance. Five times as many apples were sold in Chicago during the weeks of advertising and price cutting as any other week—even greater results here in Rochester. What has been accomplished in these cities can be accomplished in any city—in all cities. You see the possibility of increasing the consumption of apples.

Shall it be done? The answer to that question hinges largely upon this second one: will the apple men, united, provide a fund to make it possible to continue this advertising propaganda? Many of you remember, bow in January, 1913, Mr. U. Grant Border, Secretary of the Apple Advertisers of America, at a meeting like this, here in Rochester, addressed this Association, and as a means of providing an advertising fund, presented the Stamp Plan. You remember how, at the close of his address Mr. Clark Allis, then President of this Association, warmly endorsed the Stamp Plan, saying he would be one of the first to place a stamp on every barrel and box of apples he shipped. The Stamp Plan was likewise endorsed by leading apple men in all parts of the country. Then, it is discouraging that Mr. Border has to write as he has just now to me, “We were unsuccessful in launching the Stamp Plan for raising funds, the principal reason being that without sufficient men and money to organize the whole country we could not accomplish this big work.” Then he gives just one ray of hope in these words: “This, however, may come next year.” And right here is my big job this afternoon, our big job, an attempt to make this ray of hope become a glowing reality.

You men of initiative, will you not get in touch with Secretary Border at once; will you not organize each one of you in your section a local committee, which shall cooperate with the national committee in putting apple revenue stamps on sale at your local banks, and aid in encouraging every shipper to voluntarily place a stamp on every barrel and box sold? Every man, thus, will support advertising in proportion to the amount of fruit he sells. This is the exact principle of the method which has enabled citrus fruits to put the apple in the shade. Listen to President Powell, of the California Citrus Fruit Exchange, as he says: “Each member pays into the Exchange, for advertising, in proportion to the amount he sells.” Through these committees we will organize the whole country, secure the necessary united support. The success of the Stamp Plan will make possible an advertising campaign of such magnitude as has hardly been equalled in this country.
And over-production will worry us no more. We shall see the realization of the truth that no business can be expected to live and prosper without advertising; that the apple business is too big, too important, too valuable, to be allowed to drift about on the commercial sea. Having steadied its course by sound publicity methods, we will have ushered in a new era—an era of strong demand, large consumption, and encouraging price.

THE CANNING OF FRUITS AND VEGETABLES

By Claribel Nye

Leader of Canning Clubs, New York State

CANNING is a form of food preservation by which products in season are sterilized and sealed in air tight containers. From the earliest time food has been preserved. Primitive woman hung strips of meat in the sun to dry. She had never heard of bacteria or the processes of putrefaction or fermentation, but experience taught her that by drying the meat it was possible to keep it for many months to use when the hunter might not be successful in securing a fresh supply.

Today we know many other methods of food preservation—the use of salt, smoke, sugar, oil, sterilization and consequent protection from organisms of the air. Each of these methods is now in use, but the method used in the home and the one which is being developed rapidly as a commercial project is the preservation of food by canning. Many housekeepers take great pride in having the shelves filled with products canned in glass for the winter’s use. Fruits and vegetables are canned in tin in canning factories. In 1907 the output of canned peas alone was valued at $14,659,000.

It is well for the health of our people that the dietary include a generous supply of fruits and vegetables, fresh in season and for use canned during the winter and spring months. What is their value in the dietary?

1. Fruits and vegetables supply bulk or ballast to the dietary.

2. Fruits and vegetables add variety and flavor to the dietary, factors too often overlooked but very important in stimulating digestion.

3. Fruits and vegetables aid in maintaining the neutrality of the blood thus helping to prevent such disorders as rheumatism and acidosis.

4. Fruits and vegetables supply mineral matter necessary for the building of tissues and bones.

5. Fruits and vegetables are nature’s natural body regulators and aid in keeping the digestion in good working order. The condition of constipation may be relieved often by a dietary which includes a generous amount of fruits and vegetables.

There are certain principles underlying all canning and preserving. If these are understood the process becomes simple and failure can only be due to poor rubbers, imperfect jars or insufficient sterilization. Fruits, most housekeepers agree, are easily canned. Vegetables with the exception of tomatoes are supposed to be practicably impossible to can successfully. However, it is possible to can all vegetables as well as all fruits. Spoilage is due to the action upon the product of some living organism. That organism may be too small to see without the aid of a microscope, nevertheless no canned peaches ever fermented, no jelly ever was found to have mold on its surface, no can of peas ever putrefied that living organisms—yeasts, molds or bacteria—were not responsible for the change. These organisms are very important in producing many desirable changes.
in food. It is a yeast which is used in bread-making; mold gives flavor to certain cheeses, buttermilk tablets are cultures of bacteria. Although these organisms are very useful in many processes, they are the cause of trouble and failure in canning. Therefore all foods to be successfully freed from these organisms should be thoroughly sterilized.

Primitive woman was able to keep meat by drying it because organisms do not grow without the presence of moisture. Salt, concentrated sugar solution, or oil also do not form the proper medium for their growth. Thus food may be preserved by the use of these materials. Other conditions unfavorable to the growth of yeasts, molds and bacteria are extremes of temperature. Thus eggs are preserved in cold storage and fruits and vegetables are sterilized or boiled in canning. If after sterilization the material is completely sealed to prevent the entrance of air which may contain living organisms, all fruits and vegetables may be kept for months or years without "spoiling."

Vegetables present a more difficult problem in canning than acid fruits. Certain bacteria assume not only a vegetative or active stage in which condition they are easily destroyed by the boiling temperatures of water, but under unfavorable conditions they may assume a resting or spore stage. The spores are able to resist the boiling temperature of water for a limited time. Thus vegetables on which are found very resistant spore-forming organisms, have "spoiled" when canned by the directions used in canning fruits.

There are two methods used in canning fruits and vegetables. They are known as the open kettle method and the cold pack method. The open kettle method is the old way of cooking fruits or vegetables in a kettle and pouring them into the cans which are then sealed. The more modern method, also used commercially, consists in packing the products in sterilized cans and filling the cans with water or sirup. The cans are then placed in a wash boiler or cauner surrounded with water and boiled or sterilized. By the latter method products retain their form, color and flavor better than is possible when the open kettle process is used. It is also suggested that in the cold pack method directions for blanching be followed (See Bulletin No. 69 Canning Clubs in New York State, Reading Course for the Farm Home, New York State College of Agriculture).

Fruits are generally canned in a sirup. In determining the density of sirup to be used with fruits the personal equation may be the determining factor. There is no doubt that fruits canned in a light sirup retain natural fruit flavors much better than fruits which are canned in heavy sirup. From a dietetic standpoint lighter sirups are to be preferred. Concentrated sugar solutions are irritating to the digestive tract and if eaten in large quantities may flood the system and be detrimental to health. However, canned fruits are eaten with other food and even if they are very rich with sugar they should not injure the normal healthy individual. Economically fruits and vegetables in New York State should be canned. Every year, from various causes large quantities are wasted which might be canned for home use or sold to railroads, hotels, boarding houses, groceries or to private trade. There is a market for fruits and vegetables canned in glass and the ambitious boy or girl, man or woman on the farm, if there is available time, has an opportunity to develop a profitable home industry from products which in many parts of the state are a total loss. To be successful boys and girls not only must understand canning, but they must have initiative, ambition and business ability. With these characteristics there should be an opportunity for profitable home canning.
Farmers’ Week is the one week of the year when the farmers of New York State have a real opportunity to come into close contact with their College of Agriculture. Speaking for the students, the COUNTRYMAN is delighted to welcome our visitors. We are glad for many reasons to have you come. You will have the chance of seeing for yourself that the appropriations your representatives are making for the growth and support of this institution, are really worth while. By attending the lectures, conferences, laboratory practices, and demonstrations, you will get just a small touch of what your sons and daughters are obtaining here, not to speak of the benefits you, yourself, will receive. The privilege of meeting and talking with the members of the faculty of the college and so many other farmers who are interested in the same things you are, and who have similar problems to face will be invaluable to you.

During the week the faculty, students and equipment of the college are entirely at your service. Do not hesitate to make the best use of them.

The Value of Fundamental Training

In these days when technical schools are attended by multitudes of students, much emphasis has been given to the practical side of vocational training; the importance and value of a training in fundamental principles apparently has been placed in the background. No doubt this is the result of the inherent desire of mankind to get the largest possible returns from the least possible effort and delay. Taking the average undergraduate at Cornell the tendency is shown by the desire to eliminate those courses giving non-practical work and to take those which show how to make ten dollars profit from a product which gave only five before.

Professor Browne of the Department of Chemistry fittingly pointed out the value of fundamental training in an address before those attending the Agri-
cultural banquet last December. It is absolutely essential and almost imperativer, as Professor Browne points out, that a student should have a training in the basic sciences before he can comprehend the complex mechanism on which the more advanced subjects depend. To illustrate he cited how a knowledge of chemistry was necessary before botany, soil technology, or dairy could be properly understood.

The mastering of fundamental courses does not give direct money results, and, moreover, they are said to be easily forgotten. But the person who has been trained in fundamental work can not totally forget, because the principles thereafter are self-evident. It behooves every Cornell undergraduate to see that he has a thorough training in the fundamental courses of the University; then with this knowledge as a firm foundation build a super-structure of practical knowledge. So-called practical training without a broad basis of fundamental training is like a house built on sand.

We wish to announce the election of the following men as Associate Editors, to the CORNELL COUNTRYMAN staff: J. R. Du Floo, '17, J. L. Edwards, '17, J. S. Shanly, '18, and H. S. Sisson, '18. We wish also to thank T. A. Muir, '18 and M. H. Field, '18, for the excellent work they did in the competition.

Our Covers

To Miss Annette J. Warner of the Art Department of Home Economics belongs much praise for the splendid work she has done in designing the covers for the recent issues of the COUNTRYMAN. She has given generously of her time and energy in supplying a long felt need—that is, attractive and artistic covers. The COUNTRYMAN staff takes this opportunity to thank her and to express its appreciation for her invaluable assistance.

The picture on the January cover was a photograph of a noted French picture by a famous French artist. It is evident from the many inquiries we have had regarding it that it does not need a French-English dictionary to translate it into the American consciousness. Every country lover recognizes this every day scene when the long horizontal shadows lie along the road when the air is filled with a misty radiance and "the kine come hame." We all know just such grassy roads—just such wide fields—just such rounded masses of trees—just such still water reflecting the sky. As a picture of animals, how much more the artist has put into it than a mere photograph could convey. Note how many different views of cows are represented and how many different phases of cow nature from the calm meditative creatures standing knee deep in the water drinking and switching their tails, to the exasperated moolie when patience with the frisky dog has at last been exhausted.

Constant Troyan was one of a group of French artists who discovered beauty in the common everyday landscape, and in the homely scenes of everyday country life. Animal life interested him particularly and almost all his landscapes are enlivened by the presence of animals. When he died he left a large part of the money which he had acquired for the use of young artists, who were especially interested in the painting of animals, as he had been, and who were struggling for an education.

Manufacturers and distributors of agricultural supplies are desirous of reaching the college trained farmer. Tell them that you saw their advertisement in the COUNTRYMAN. It will mean better service to you and will help us.
The agricultural student athletic activities are well epitomized in the college yell. The slogan reflects the spirit and the motive which inspires the agricultural students to participate actively in athletic sports. The four long-drawn-out repetitions of the word "Cornell", that introduces the yell, rings true loyalty to the University and the name of the one whom all desire to honor. Then follow the words "agriculture" and "culture", representing the broad technical and cultural field which modern agricultural education provides. The yell closes with "agriculture", which allows emphasis to be placed upon the college which it represents. The yell was adopted in 1912 as the result of a spirited competition in which many yells were submitted and tried out before the agricultural students, assembled for an "athletic rally". G. M. Butler, 1912, won the medal which was awarded to the person suggesting the yell that best met the approval of the student body.

The athletic activities of the agricultural students are in three principal fields: University athletics, inter-college sports, and out of door recreation events in which different departments, clubs, or other groups of students participate informally.

An attempt is made, in this article, to bring together the names of the agricultural students who have represented the University in the various sports, in so far as the records available will permit. The fact that there does not appear to be a record available, giving the names of the students who have participated in the different athletic sports since the founding of the University, or a record showing the college in which the students who have won athletic honors were registered, makes it impossible, at this time, to present a complete list of the agricultural students who have contributed to the honor and the glory of Cornell in this particular field of University activities. However, a list is here submitted as a contribution toward a complete record, which may be secured by the co-operation of all who are interested in making an accurate history of the athletic achievements of those who have contributed to the splendid record which Cornell has made in the University athletic world.

The fact that Cornell athletics presupposes good scholarship and that this spirit dominates the policy of all of the coaches who have the direction of the students' athletic development, makes the honor greater on the part of all who have participated in University athletics. It is an honor in which all Cornellians should rejoice, that, wherever her fame has spread, Cornell is known as a University maintaining high standards of honor in athletics.

The list of persons and the events in which they participated, which follows, indicates that the agricultural student places first in importance the opportunity of representing the University in athletic events and that he also takes particular pride in doing his part in bringing to his own college such credit as may come from the winning of victories in inter-college sports.

The long list of agricultural students given below, who have contributed to the success of University athletics, is a credit to the enterprise and spirit of those who participated in the contests, and to those who furnished the moral and financial support that made victory possible. The strong, enthusiastic support of the
student body, in many instances, is a determining factor in the success of the contestants. In supporting the teams the agricultural students have always shown a commendable spirit of pride and liberality. The fact that they raised, by subscription, a fund of $600.00 for the purchase of the agricultural college gig, and have provided, in the past five years, $140.00 for the purchase of medals to be awarded to students who have "made the teams"; that they have furnished suits and athletic supplies abundantly for all who desired to compete in intercollege sports; that they have maintained an athletic council to organize and administer college athletic affairs, is better evidence than mere words to show why and how the agricultural students have been so successful in their athletic activities.

Agricultural students who have participated in university athletics and some of the special honors which they have won.

Baseball

Number of persons participating—16.

<table>
<thead>
<tr>
<th>Name</th>
<th>Years in Event</th>
<th>Special Honor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brinkerhoff, H. E., '06</td>
<td>(1) (3) C</td>
<td></td>
</tr>
<tr>
<td>Bryant, T. V., '15</td>
<td>(1) C</td>
<td></td>
</tr>
<tr>
<td>Carter, H. N., '17</td>
<td>(1) C</td>
<td></td>
</tr>
<tr>
<td>Deshon, J. J., '07</td>
<td>(2) (3) (4) C</td>
<td></td>
</tr>
<tr>
<td>Grossman, M. H., '14</td>
<td>(2) (3) (4) C</td>
<td></td>
</tr>
<tr>
<td>Hobson, A. T., '15</td>
<td></td>
<td>Numerals</td>
</tr>
<tr>
<td>Knowles, G. W., '15</td>
<td></td>
<td>Numerals</td>
</tr>
<tr>
<td>Ludwig, E. E., '16</td>
<td></td>
<td>Numerals</td>
</tr>
<tr>
<td>O’Connell, G. M., '17</td>
<td></td>
<td>Numerals</td>
</tr>
<tr>
<td>Oyster, G. H., '11</td>
<td>(2) Numerals</td>
<td></td>
</tr>
<tr>
<td>Perkins, R. F., '17</td>
<td>Numerals</td>
<td></td>
</tr>
<tr>
<td>Prichard, L. C., '12</td>
<td>Numerals</td>
<td></td>
</tr>
</tbody>
</table>

The type of medals awarded to the members of the agricultural intercollege teams.

<table>
<thead>
<tr>
<th>Name</th>
<th>Years in Event</th>
<th>Special Honor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roy, C. A., '15</td>
<td>(1) C</td>
<td></td>
</tr>
<tr>
<td>Rutherford, M. H., '10</td>
<td>(4) C</td>
<td></td>
</tr>
<tr>
<td>Ward, D. D., '12</td>
<td>(2) Numerals</td>
<td></td>
</tr>
<tr>
<td>Watson, S. H., '13</td>
<td>(1) Numerals</td>
<td></td>
</tr>
</tbody>
</table>

Football

Number of persons participating—24.

Austin, B. H., '12 | (4) C |
Bailey, C. W., '16 | (3) C |
Bates, E. S., '13  | (2) C |
Bayer, Edw D., Sp.'09 | (3) C |
Bell, F. W., '11   | (2) C |
Cook, G. T., '08   | (1) (2) (3) (4) C |
Cool, W. C., '16   | (1) (2) (3) (4) C |
Donnan, G. S., '09 | C ad |
Barle, Edwin, '06  | (1) (2) (3) (4) C |
Frick, A. J., '16  | (2) C |
Galgolgy, E. J., '15 | (3) (4) C |
Jameson, W. H., '16 | (3) C |
McCutchon, J. D., '16 | (1) (2) Numerals |
Mehaffey, A. B., '15 | (1) (3) (4) C |
Newhall, J., '06   | (3) (4) C |
Otis, J. C., ’01 (2) C
Stevenson, W. G.
Stimson, S. N., ’12 (3) C
Sweetland, E. R., ’99 (3) C
Tilley, C., ’17 (1)(2) C
Wood, B. B., ’11 (2)(3) C
Younglove, J. R., ’16 (1) Numerals

Association Football or Soccer.
Number of persons participating—10.
Birkhahn, G. B., ’08 (’08)(’09)
Bishop, S. C., ’13
Cotton, R. T., ’14
Creifelds, W., ’15 Captain
Nicolai, F., ’17
Thomas, F. H., ’16 Captain
Lynch, H., ’15
Otis, J. C., ’13
Smith, L. B., ’14
Wilson, W. de Sid, ’13

Basket Ball.
Number of persons participating—2.
Brown, L., ’16 C
Lyford, P. S., ’06 Captain

Tennis.
Number of persons participating—1.
Burlingame, G. G., ’07

Lacrosse.
Number of persons participating—11.
Burt, G. J., ’11
Collins, C. P., ’16 C
Dean, A. L., ’13 C
Fries, W. H., ’11
Grimes, A. M., ’15 C
Johnson, L. W., ’06 C
Kraker, J. L., ’12 C
Lawles, H. D., ’14 C
Osgood, H. M., ’15 Insignia
Spiegelberg, F., ’15 C
Taylor, H. H., ’15 C Captain

Hockey
Number of persons participating—2.
Hunter, F. T., ’16 (2)(3) Insignia
Smith, L. B., ’14 (2)(3) Insignia

Cricket
Number of persons participating—2.
Mathews, W. A., ’15 (2)(3) Insignia Captain

Track
Number of persons participating—38.
Baker, W. C., ’98 (4) C
Brogg, L. D., ’12
Burgdorff, F. J., ’12
Caldwell, D. S., ’14 (4) C

Cook, G. T., ’08 (1)(2)(3) C
Corwith, J. R., ’16
Hageman, H. W., ’13
Hasleton, W. D., ’12 (2) Numerals
Hitchcock, R. W., ’10
Howard, L., ’17 (1) Numerals
Humphrey, H. N., ’11 (2) Numerals
Irish, H. E., ’16 (2) Numerals
King, C. J., ’15
Lawrence, R. J., ’13
Leister, C. W., ’17 (1) Numerals
Lukens, A. L., ’15 (1)(2) Numerals
Lynch, H., ’15 (2) C
Millard, H. E., ’16 (2) C
Morrison, H., ’14 (4) C
Munns, J. H., ’14 Numerals
Nicholas, G. L., ’15 (1) Numerals
Osler, F. B., ’17 Numerals
Phillips, J. H., ’10 (2) Numerals
Pickett, H. N., ’11
Porter, F. J., ’05 (2)(3)(4) C
Richards, A. W., ’17 (1) Numerals
Rossman, R. L., ’09 (2)(3) C
Stein, C. J., ’09
Taibot, L. J., ’11 (2) Numerals
Taylor, G. M., ’16 (2) Numerals
Townsend, T. H., ’17 (1) Numerals
Tremann, L. C., ’14 (1)(2) Numerals
VanKleck, J. R., ’12 (2)(3) Numerals
VanWinkle, A. F., ’16 (1)(2) Numerals
Wheeler, R. A., ’17 (1) Numerals
Whinery, J. E., ’14 (5)(4) Numerals
Young, H. C., ’10 (2)(3)(4) Numerals C Captain

Cross Country.
Number of persons participating—14.
Burke, Frank, ’16 (2) C Numerals
Corwith, J. C., ’16 (3) C
Heath, C. O., ’17 (1) Numerals
Kraker, J. L., ’12 (4) C
Inson, L. W., ’13 (3) C
McGolrick, J. E., ’14 (3) C
Pec. N. R., ’10 (2) Numerals
Stevenson, S. H., ’12 (2) C
Stewart, P. F., ’16 Numerals
Sullivan, F. F., ’15 Insignia
VanKleck, J. R., ’12 C
Wheeler, H. B., ’17 (1) Numerals
Springale, L. V., ’17 (1)(2) C
Young, H. C., ’10 (2)(3) C

Wrestling.
Number of persons participating—9.
Bane, C. F., ’13
Bane, W. C., ’12
Dragoshinoff, D. G., ’07
Embleton, H., ’12
Gallogly, E. J., ’15 (3) C Captain
Green, S. S., ’15 (2) C
Stimson, S. N., ’12
Stokoe, W. C., ’13 (3)(4) C Insignia Inter-col. champ.

Fencing.
Number of persons participating—1.
Harries, W. E., ’08 Captain
Student Activities 403

Swimming.
Number of persons participating—4.
Bowers, W. J., ’15 (2) (3) Insignia
Hamilton, G. H., ’12 Captain
Kohn, N. E., ’14 Insignia
Walker, H. W., ’13 (4) Insignia

Number of persons participating—39.
Bailey, C. W., ’16 Numerals
Bates, E. S., ’13 (2) (3) Commodore C
Bayer, E. I., Sp., ’09 (2) (3) Commodore C
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain
Bird, E. S., ’14 (3) (4) Commodore C
Brinckerhoff, A. F., ’02 (2) Captain

Number of persons participating in University sports (eliminating duplications where persons participated in more than one type of sport): 161.

The following tabulations show the rating of the Agricultural College in the various inter-college athletic events and the inter-college championships.

Soccer.
Year Winning College Position Ag’s
’05-’06 M. E. 4th
’06-’07 M. E. 4th
’07-’08 M. E. 4th
’08-’09 M. E. 2nd
’10-’11 Agr. 1st
’11-’12 C. E. 3rd
’12-’13 M. E. 3rd
’13-’14 Agr. 1st

Cross Country.
Year Winning College Position Ag’s
’06-’07 C. E. 4th
’07-’08 M. E. 4th
’08-’09 M. E. 4th
’09-’10 Agr. 1st
’10-’11 M. E. 2nd
’11-’12 Agr. 1st
’12-’13 Agr. 1st
’13-’14 Agr. 1st

Basket Ball.
Year Winning College Position Ag’s
’06-’07 M. E. 2nd Tie
’07-’08 C. E. 2nd Tie
’08-’09 C. E. 2nd Tie
’09-’10 Law 4th
’10-’11 Law 4th
’11-’12 Law 3rd
’12-’13 C. E. 2nd
’13-’14 C. E. 3rd

Carnival.
Year Winning College Position Ag’s
’08-’09 Vet. 4th
’09-’10 Arts 4th
’10-’11 Agr. 1st
’11-’12 Agr. 1st
’12-’13 Agr. 1st
’13-’14 Agr. 1st

Track.
Year Winning College Position Ag’s
’06-’07 M. E. 4th
’07-’08 M. E. 3rd
’08-’09 M. E. 4th
’09-’10 C. E. 4th
’10-’11 C. E. 2nd
’11-’12 M. E. 2nd
’12-’13 Agr. 1st
’13-’14 Agr. 1st

Baseball.
’05-’06 C. E. 4th
’06-’07 M. E. 4th
’07-’08 M. E. 3rd
’08-’09 M. E. 4th
’09-’10 C. E. 4th
’10-’11 Agr. 1st
’11-’12 Agr. 1st
’12-’13 C. E. 2nd

Summary showing number and nature of events in which Agricultural students participated.

Baseball 16
Football 24
Soccer 10
Basket Ball 2
Tennis 1
Lacrosse 11
Hockey 2
Cricket 2
Golf 38
Track 33
Cross Country 14
Wrestling 9
Fencing 1
Swimming 4
Crew 39
Total 174

Number of persons participating in University sports (eliminating duplications where persons participated in more than one type of sport): 161.
The large and rapidly increasing number of students in the agricultural college, as well as the athletic prowess of the students, is an important factor in the inter-college sports. The difference in number of students in the different colleges must be taken into consideration in comparing the results of all inter-college athletic contests. The agricultural students recognize and pay high tribute to the enthusiasm and the pluck which is manifested by the students in the colleges in which, on account of less numbers, they are seriously handicapped. The finest test of athletic mettle is the spirit with which a team enters contests in which it competes against larger numbers.

The splendid spirit of friendly rivalry that has, from the very first, prevailed among the students in the many colleges, particularly in the inter-college sports, is a source of satisfaction and pride on the part of all Cornellians.
CAMPUS NOTES

The Horticultural Lazy Club of which the Pomology Club is one of the offsprings, is the oldest club in the Agricultural College, the first meeting of the Club being held in Nov. 1896. Former Dean L. H. Bailey was at that time Professor of Horticulture and the leading spirit in the forming of the club. In fact he was godfather to the club title which represented to him, so he said, one of the leading traits of a few of his students. This club was out of the ordinary in that there was no organization, no president, secretary, or minutes of the last previous meeting, just an informal gathering of students and faculty to discuss some topic of horticultural interest. Many men, who were members of this club, have made reputations for themselves: John Craig, F. A. Waugh, G. Harold Powell, H. P. Gould, Bryant Fleming, R. M. Curtis, W. C. Baker, G. N. Lauman and a host of others. The club itself has had a certain influence on the horticulture of the country, notably the adoption by the American Pomological Society of the rules of nomenclature, as discussed and recommended by this club. The traditions of the old Lazy Club are still cherished by the oldest graduates and its influence is felt by the branch clubs that have been formed by the separate interests of the Pomology, the Floriculture and the Vegetable Gardening sections.

The Pomology Club is an organization of students interested in any of the phases of Pomology. The membership is open to all and is not permanent. The club meets as regularly as possible every two weeks in room 202, Roberts Hall. During the last term an average of about 40 students have attended each meeting.

At the beginning of each semester new officers are elected. For the first term the officers were, R. C. Parker, Sp., president, F. P. Metcalf, Grad., vice president, and A. J. Heinicke, advisor. One of the members is elected as a representative on the Agricultural Executive Committee. The representative for the first term was L. J. Steele, '15.

Professor C. S. Wilson addressed the club at the first meeting. The plans for the Fruit Exhibit of the Department of Pomology were discussed. The Exhibit was held Nov. 5-7 and the second meeting was held in connection with it. Different members made reports on fruit growing in their home districts. At the next meeting Assistant Professor H. B. Knapp discussed the new Apple Packing, Grading, and Branding Law. The fourth meeting was taken up by reports from the members on yields, markets, and market conditions in different localities. The following meeting was held in connection with the Floriculture section. Assistant Professor Lumsden spoke on the relation of Floriculture to the people of New York State. An address on Tropical Horticulture by Director B. T. Gallo- way was the principal feature of the next meeting. At the last meeting
Professor Whetzel gave an illustrated talk on his experiences in Europe. A discussion of the Annual Convention of New York State Fruit Growers held in Rochester, January 6-8, followed this talk.

The fruit at the Convention of the N. Y. State Fruit Growers’ Association, held in Rochester, January 6-8, was judged by a team picked from the Pomology 8 class. The team consisted of E. R. Wagner, ’15; L. J. Steele, ’15 and R. C. Parker, Sp., who were selected by a competition based largely on several identification tests.

Quite a considerable amount of fruit was judged with little difficulty, until the large entries of Baldwins and Spys offered the most perplexing problems.

The Cornell University Glee, Banjo, and Mandolin Clubs had a very successful trip during the Christmas recess. After leaving Ithaca, the clubs proceeded to Denver where the first concert was given. From Denver the clubs returned to the East, stopping to give concerts at Omaha, Kansas City, St. Louis, and Milwaukee, on January 1st, a concert was given in Chicago. The next stop was Toledo. The final concert was given in New York on January 4th.


The completion of the new Soils Building has given an opportunity to make several much needed shifts. Some departments were crowded while others had more space than could be used to best advantage.

The agricultural library is to be changed from its place on the first floor of Robert’s Hall to the basement of the old Agronomy building. The space now occupied by the library will be taken by the Secretary’s office. The information department will occupy the rooms now used by the Extension department at east end of the first floor of Roberts Hall. On the second floor, the Farm Bureau is to have the entire east end. The Soils Laboratory on the second floor of the old Agronomy building will be divided and used for Botany and Farm Crops.

Departments in some of the other buildings will also be changed. The Department of Farm Management is to be changed to the old Animal Husbandry building. Vegetable Gardening is to go to the Poultry building. The departments of Farm Mechanics and Rural Education are to be housed in the new Soils building. The Head greenhouses are being remodelled for offices and classrooms for Floriculture.

The report system New Ag Report which was adopted at a Faculty meeting last June is being used at the present time. The new system affects only students in the College of Agriculture. The chief change is that the reports are to be made out twice a year—on December 1 and April 1. Each professor or instructor will make out the reports for the students in his classes. Copies of the cards are sent to the student and his advisor. Only students whose marks are under 65 are affected.

Besides the name of the student and the subject taken there are on the card spaces for data on the following points: health, methods of study, initiative, expression, industry, pre-
vious preparation, daily preparation, attendance, and ability. A note is made if too much time is apparently being spent in outside activities. The instructor fills out these blanks according to where the student is deficient and adds any remarks he may wish to make about the student. These reports are kept on file in the Secretary’s office.

The first news item issued by the recently established Information Service information service for the College of Agriculture was a general story about Farmers’ Week. Reprints received from clipping bureaus showed returns from 117 papers with a combined actual circulation of 629,004 copies, all within one week of the issuance of the article. The figures do not include returns from any New York City papers, which would have bolstered the circulation record without taking the announcement of Farmers’ Week to those who would be helped by it. Whether the item was printed by any metropolitan daily is not known; the College received no clipping from New York City papers.

In newspaper offices the readers of a paper are reckoned on a ratio of five to each paper circulated. This is probably too high, though it is a generally accepted basis. On such a calculation the number of readers reached by the papers from which clippings were received, was more than three million. Even at only two to the copy the papers reached a million and a quarter readers.

It can be stated with assurance that 117 different clippings do not represent all the papers which printed the item; in all likelihood this is only a minor portion of the total number of papers which used it.

The first item has been followed by others dealing with specific phases of Farmers’ Week.

Graphic representation showing the increase in enrollment in the College of Agriculture.

YEARS AND TOTAL NUMBER OF STUDENTS

<table>
<thead>
<tr>
<th>1868-9</th>
<th>1883-4</th>
<th>1893-4</th>
<th>1898-9</th>
<th>1904-5</th>
<th>1909-10</th>
<th>1913-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>60</td>
<td>115</td>
<td>191</td>
<td>418</td>
<td>967</td>
<td>2,557</td>
</tr>
</tbody>
</table>
FORMER STUDENT NOTES

Former Students—Your classmates are anxious to know what you are doing. Write today, giving us some information about your work.

'07, Ph.D—J. Eliot Coit, Countryman Editor '05-'06, writes as follows: "After receiving my doctor's degree at Cornell in 1907, I went to the University of Arizona as Associate Horticulturist. My studies in the horticulture of southern Arizona, California, and Sonora, and some of the results of these studies appeared in the annual reports of the Experiment Station and as Bulletin No. 58 on Citrus Fruits, Timely Hint No. 78 on pruning deciduous orchards, and Bulletin No. 62 on Olive Culture and Oil Manufacture.

"In 1909, I moved to southern California becoming connected with the University of California's Pathological Laboratory at Whittier in Los Angeles County. My studies in citriculture were continued here and I became interested also in walnuts, avocados and a number of other semi-tropical fruits. I was much interested in the development of the date industry, having spent a great deal of time studying at the cooperative date orchards at Tempe, Arizona. The knowledge gained of desert agriculture finally led to the publication of California Experiment Station Bulletin No. 210 entitled Imperial Valley Settlers' Crop Manual. This was published in conjunction with Mr. Walter E. Packard in charge of the Experiment Station in the Imperial Valley.

"On February 1, 1912, I was made Associate Professor of Pomology in the University and appointed Superintendent in charge of the Citrus Experiment Station at Riverside. The
work of the Station was immediately reorganized and the present buildings were constructed during my superintendency. On January 1, 1913, I was appointed Professor of Citriculture and head of a new division of Citriculture in the University of California. I moved with my family to Berkeley, and have since been engaged in developing undergraduate and graduate courses in Citriculture and Semitropical Pomology. The Division of Citriculture includes in its field the citrus fruits and all other semitropical fruits including dates, olives, figs, avocados, feijoa, mangos, pomegranates, persimmons, cherimoyas, as well as bananas and many others of lesser importance. The Division also gives instruction at the Farm School at Davis, and its plantings of semitropical fruits are made at Davis, the climate at Berkeley being not suitable for this purpose.

"One of the features of the instruction work given is a summer practice course conducted for six weeks throughout the citrus districts in California. From fifteen hundred to two thousand miles are usually covered and a large number of the best citrus and semitropical fruit properties in the State are visited and studied. As much actual practice work as is possible is secured.

Soon after leaving Cornell in 1907 I married Miss Emily A. Hanna of Raleigh, N. C., and we now have two daughters aged three and five.

Have prepared and offered a Correspondence Course in Citrus Fruits in which 1400 students are enrolled.

He has just completed "Citrus Fruits", Rural Science Series, edited by Prof. Bailey and published by McMillans, now in press.

'13, B.S.A.—E. C. Auchter graduated from Cornell February 7, 1912, and immediately accepted a position at the West Virginia University and Agricultural Experiment Station as Assistant Horticulturist in the Experiment Station and Instructor in Horticulture in the College of Agriculture. He was raised to the rank of Assistant Professor of Horticulture on September 1st, 1914, in the same University. Auchter is especially interested in the Pomological side of Horticulture, teaching the practical and commercial phases of this work in the University, as well as doing much of the experimental work in the field. At present many valuable experiments on orchard running, spraying, fertilizer, culture and variety tests are under way at the West Virginia Agricultural Experiment Station. Orchard surveys with some costs of production have been completed in two of the foremost fruit counties of the state and will soon be published.

'06, F. E. Peck—One year of graduate work, in Dairy Bacteriology and Nature Study. During graduate year, was acting manager of Sage College. The two years following, taught Agriculture and Sciences at Mt. Hermon School, Mass.; resigned and took position with the Fairfield Dairy Co., of Montclair, N. J., the originators of, and probably the
largest dairy now producing certified milk. For two years was Chemist and Bacteriologist with the company. The next two years were spent in the South, a short time as head of the Agricultural department of the Berry School, Rome, Ga., which position was resigned to take up duties of Chemist and Bacteriologist with one of the largest commercial dairy companies of the South, the Clover Farm Dairy of Memphis. One of the things the company desired was a way to profitably dispose of their surplus skim milk. A scientifically prepared buttermilk was therefore put upon the market which quickly took up the surplus milk and called for more. The Southerners being lovers of fermented milks. The position now occupied and held for the past two years is with the Wilbraham Academy, Wilbraham, Mass., as business manager of the institution, which also includes a farm of some 250 acres.

'08, B.S.A.; '10, M.S.A.—E. H. Anderson writes us the following letter: In 1908, I graduated from the Agricultural College, B.S.A. degree, and secured M.S.A. in 1910. From April, 1908 to Nov. 1911, I was working my father's farm at Hilton, N. Y. on share rent basis. In April, 1912, I purchased the farm in Hilton and have since been conducting it along with my other business.

In the Fall of 1911, I took the position of Secretary and Fruit Expert to the Bedford Farmers' Cooperative Ass'n, Mt. Kisco, N. Y., having the supervision and care of orchards for the season, and in the summer of 1912, supervised the erection and operation of an evaporator and cider mill, and the packing and marketing of the apples of the Association.

In March, 1912, I accepted the position of Farm Bureau Mgr. of Niagara County. Owing to the importance of the fruit industry in Niagara County, a large portion of my time has been spent in orchard problems. Pruning, spraying, cultivation, the selection of varieties for young orchards, and packing and marketing of the fruit, all demand my attention in their order.

In cooperation with Mr. Scovell, of the United States Dep't. of Agriculture, we have just completed a Farm Survey of one of the intensive fruit-growing towns of Niagara County. This will give us much valuable information in regard to systems of farm management in this section.

In connection with my other duties, I have carried on a general management of my home farm of 85 acres, of which about one-half is in fruit. Apples are a specialty. Twelve acres of orchards, which in 1908 gave an average yield of 75 barrels per acre, now have averaged better than 100 barrels per acre for the past three years. This has been accomplished by a good system of farm management, and the use of cover crops. By careful attention to spraying, packing and marketing, I have been able to secure a price of from 25 cents to 30 cents per barrel above the price paid for the same variety in that section.
While fruit-growing is my specialty, I am endeavoring to produce all the feed and grain needed for the stock on the farm, besides having some each year to sell. I am raising colts and pigs as a side-line, as I believe it is safer not to tie up too closely to one crop.

I am enclosing two pictures, one of a tree in blossom taken last spring. This tree, one of an orchard planted in 1908, produced 4 bushels of “A” Grade apples in the Fall of 1914, which sold for $2.00 per barrel. The other picture is of a new variety of apples, which originated on my farm, and which I am propagating. It is of deep red color and good size, mildly acid, and ripens with the Tompkins County King. I am testing this variety out in my own orchards, and am convinced that it is an apple worth propagating. I believe in the future of the apple and that the new Apple Grading Law, in effect this Fall, is a step in the right direction.

'08, B.S.A.—Lewis A. Toan after graduation returned to his home in Perry, N. Y. Planted 43 acres apple orchard and 13 acres peaches. Total farm acreage about 400. Taught Agriculture in Perry High School nearly two years 1911-12 and 1912-13, looking after farms between times. On April 15, 1913 became manager of Monroe County Farm Bureau with headquarters in the Chamber of Commerce at Rochester. The work has been largely in fruit sections of that County.

'08, Sp.—Mr. H. O. Tiffany has recently accepted a position as manager of the Chippewa Land and Pastures Company, at Nelson, Wis., which is near Minneapolis. It is a tract of approximately 9000 acres which is likely to be increased to 15000 acres. It lies at the junction of the Chippewa and Mississippi rivers and is subject to overflow. He is also the author of a circular on “Cost of Land Drainage” published as Circular 147 of the Ohio Experiment Station at Wooster, which has recently been issued.

Cornell Civil Engineer, 1909, Mr. John R. Haswell, drainage engineer of the Eastern District of the U. S. Department of Agriculture, with head-
show and exhibited over ninety plates of apples brought in by the surrounding farmers. The students scored these and the Pomology class at the Cortland Normal also acted as judges for the exhibit.

"The following two years I spent at Cornell working for my M.S.A. degree and assisting in the Bacteriological laboratory of the Department of Dairy Industry. My minor work toward my degree was with the Pomology Department. I tested the cooking quality of the different commercial varieties of apples. I used over twenty different varieties and as a general conclusion found that, an apple of high quality when eaten raw, did not always retain that quality when cooked.

"I received my degree in September 1914 and soon after accepted a position as instructor in Bacteriology and Agriculture in the Iowa State Teachers College at Cedar Falls, Iowa. The college has a registration of about 1800 students. I have been teaching Elementary Agriculture and have started a course in Bacteriology for Home Economics students. Thus far my work has been pleasant and fairly successful." Miss Genung's address is 2303 Olive St., Cedar Falls, Iowa.

"During the summer we purchased another farm of 120 acres and now have 30 acres plowed and ready for planting in the spring. This will take about 1500 apple trees and will be planted largely with McIntosh, Gravenstein, and Northern Spy. If the Spies do not do well they will later be top worked into Kings."

'10, Grad.—W. H. Darrow sends us the following letter: "I left Markham, Va., last April 15th and with my partner, H. P. Safford, bought a 75 acre farm in Putney, Vermont. At the present time we have 25 acres plowed and set to fruit—about 1000 apples mostly McIntosh; 350 peaches and enough of cherry, plums, apricot, and quince to make 1500 trees, besides the above tree fruits we have two acres of promising strawberries and one acre of raspberries. We raised potatoes between our tree rows this year and have 900 bu. in the cellar at the present time. This fall we set one row of raspberries between the tree rows after digging the potatoes.

(Continued on page 414.)
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From Missouri—Received plants O.K. They surprised me. So fine, packed nice in bunches, with roots all straight down, one plant like the other and no scrubs in them. Joseph Vogel, Jefferson County.

From Montana—The plants came through quickly and in fine condition. Matt W. Anderson, Lewis and Clark County.

From New York—Wish to acknowledge for the Station, the receipt of strawberry plants. Arrived in good condition. A. M. Taylor, Geneva, N. Y.

From Florida—Plants received in fine condition and everything satisfactory. I. W. Peck, Manatee County.

Write for 1915 Berry Book

Tells how to plant and cultivate strawberries and other small fruits. It lists and describes Allen's True-to-Name Blackberries, Raspberries, Strawberries, Currants, Grapes, Asparagus, etc. Well illustrated, and full of valuable information to fruit growers and gardeners. You should have this book for reference. Write today for a free copy.

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SALISBURY, MARYLAND.

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Former Student Notes

Continued from page 414

veloping a fruit and poultry farm having started operations in the spring of 1913. At the present time having thirty acres planted to peaches and apples, besides a small orchard with a variety of fruits, he also has recently planted about 3,000 bush fruits including blackberries, currants and gooseberries. After a year or two he is planning to set some more trees. He has about 300 laying hens, Barred Plymouth Rocks, most of which were reared on the farm during the past season.

It is his plan to develop a retail market for his produce in the suburban district of Philadelphia, having already started a trade in fancy poultry and strictly fresh eggs.

The other crops which he is growing and their yields are as follows: 250 bu. potatoes, 750 bu. shelled corn, 230 bu. oats, some alfalfa and timothy hay and quite a quantity of truck crops.

'12, B.S.A.—Harry Embleton spent the summer of 1912 on the poultry farm at Ithaca. He then went to Purdue University as instructor in the Poultry Department. He started a wrestling class while there and worked up quite a lot of enthusiasm. In February, 1913, he resigned, taking an interest and an active part on an eighty acre fruit farm at Highland, N. Y. He says, "It seemed good to get back into the fruit work, as I looked forward to a future in this work." However, contract troubles caused him to break relations on June 1st. Since then he has been with the Sharples Separator Co., of Chicago, especially in the milking machine line.

'12, B.S.; '13, Grad.—Mr. E. L. Markell during the year 1912-13, was an instructor in the Department of Pomology at Cornell University. In August, 1913, he accepted a position as Scientific Assistant with the United States Department of Agriculture, Bureau of Plant Industry, Office of Fruit Handling and Transportation. He was first detailed to Georgia on peach work. In the Fall of 1913 Mr. Markell was stationed at Hood River, Oregon in connection with apple storage and handling investigations, and the following winter he was again in Florida engaged in fruit and vegetable handling and precooling investigations. During the following Summer occurred his marriage to Miss Genevive Williams, of Brooklyn, N. Y., Cornell, '13, Grad. In the fall of 1914 he was sent to the North West in charge of the apple investigations there. At the present time he is in Florida in charge of a party engaged in fruit and vegetable investigations. This work includes a study of the cause and prevention of the factors of decay in harvesting and shipping lettuce, tomatoes, celery and other truck crops, as well as citrus fruits and pineapples. The equipment of the party includes a complete portable precooling plant. Mr. Markell has made an excellent record in his work with the United States Department of Agriculture, and is highly regarded by the officials of the Bureau of Plant Industry as well as his co-workers.

'12, B.S.A.—T. M. Sprague left Cornell in February 1913 to take a position as Fruit Expert for the Bedford Farmers' Cooperative Association. The Association maintains and operates three spraying outfits which are for the use of any members who desire such work done. Mr. Sprague has been superintending the operation of these outfits, advising as to fruit problems and superintending the cider mill and apple evaporator.

'12, Special.—Tom Milliman, who has been managing an estate at Timber Point, L. I., has been appointed County Agent of the Farm Bureau in Orange County, N. Y. He was selected from 20 applicants. He assumed his duties on January 1, 1915.

'13, B.S.—Mr. G. L. Fisher, has been recently appointed by the Bureau

(Continued on page 418.)
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Former Student Notes

(Continued from page 414)

of Plant Industry and Pomological Investigations to receive and inspect experimental lots of fruits and vegetables. He is stationed at New York City and will inspect there the experimental shipments sent from Florida.

'08, B.S.A., M.S.A., 1910, P.H. D., '13—Howard B. Frost went to the University of California in Oct. 1913 for Plant-Breeding research. His official title is Instructor in Graduate School of Tropical Agriculture, Assistant in Citrus Experiment Station. He started some hybridization work with citrus fruits last spring. He already has some work on heredity underway.

On December 22nd the new site for the school station was selected, comprising about 477 acres of land near Riverside, only three or four miles from the present site.

'13 B.S.—Mr. H. G. Honeywell is managing a 176 acre farm at North Branch, N. J. Hay and corn are the principal crops raised.

'13 B.S.—N. D. Steve has bought a 100 acre farm at Montezuma, N. Y. The land is mostly muck, and celery, onions and lettuce will be the main crops. He has been making surveys in the Rural Engineering Dept. for the last two years.

'13 W.C.—Theodore V. W. Swift, who took the winter course in Agriculture, is herdsman on the Woodcrest Farm at Rifton, N. Y., where he has charge of over 150 Holstein-Friesian cattle.

'13 B.S.A.—E. V. Underwood is manager of the Oswego County Farm Bureau. He is at present at work upon a bulletin, showing lack of lime in Oswego County.

'14 B.S.—L. G. Howell has resigned his position, as teacher of Agriculture in the Springfield, Mass., schools to accept a position with the Office of Farm Management, United States Department of Agriculture, Washington, D. C. This fall he has been doing investigational work for the office in southern New England.

'14 B.S.—H. Branch is working with L. G. Howell in the New England investigational work for the U. S. Dept. of Farm Management.

'14, B.S.—F. W. Lathrop last year's Editor of the COUNTRYMAN is teaching agriculture at Canandaigua Academy, one of the thirty-four high schools in the state which are teaching agriculture as a four year course. In connection with this position, Mr. Lathrop does a certain amount of extension work. He was married on Dec. 31, 1914, to Miss Lucy Avery of Groton, Mass.

'14, B.S.—H. A. D. Leggett was married to Ida Savage, sister of Professor Savage on Wednesday, November 25th, at Boston, Mass.

'14, B.S.—Mr. E. D. Vosbury in September, 1914, accepted a position as Scientific Assistant in Fruit Handling and Transportation work in the United States Department of Agriculture, Bureau of Plant Industry, Office of Fruit Handling and Transportation. Mr. Vosbury was first engaged in apple storage investigation at Payette, Idaho and other points in the North West during the fall of 1913. At the present time he is a member of the party headed by Mr. E. L. Markell, engaged in investigations in precooling and handling of fruits and vegetables in Florida.

Ex., '15,—Clarence F. Morse was married to Miss Wilhelmina Cohn on December twenty-ninth at Portland, Oregon. The bride is the daughter of Mrs. Frank M. Cohn of that city.
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<tr>
<th>Breed</th>
<th>Eggs laid 1st year</th>
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<th>Eggs laid 3rd year</th>
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<td>Cornell Supreme</td>
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FRONTISPICE (Photo by Cable) - - 464

THE DISTRIBUTION OF EGG PRODUCTION - By James E. Rice 465

IMPORTANT PHASES IN THE DEVELOPMENT OF BETTER MARKETS - By Earl W. Benjamin 475

COST OF POULTRY FEEDS
By A. B. Dann 479

METHOD OF SELECTING THE HIGH PRODUCING HENS - By O. B. Kent 481

PIGEONS AND SQUABS
By Thomas Wright 484

MY EXPERIENCE WITH POULTRY
By Carolyn J. Bott 489

FACTS ON SUCCESSFUL POULTRY KEEPING - By Edward S. Parsons 491

FARMERS' WEEK IMPRESSIONS AND COMMENTS By Bristow Adams 495

EDITORIALS - - - 496

CAMPUS NOTES - - - 500

FORMER STUDENT NOTES - - - 503
The Kermis Cast. Over 100 students participated in the annual Agricultural Entertainment given Wednesday evening of Farmers' Week.

(See page 500.)
How does the time of hatching influence the distribution of egg production?

It becomes necessary, before drawing final conclusions, regarding the laying capacity of fowls, to ascertain whether the production of any particular individual is due to inheritance, or whether it has been modified by the environment. It now appears to be well established that either one or both of these two factors—heredity or environment—may be controlling influences.

Under normal conditions of development and management the domestic fowl should commence to lay when about six to eight months old. However, the time of first production varies with the breeds, varieties, strains and individuals. It is also influenced by methods of feeding, brooding, housing and care. The domestic fowl is, to a very remarkable extent, responsive to her environment. Among the important environmental conditions that influence egg production is that of climate. This is so important a factor that it must be taken into serious consideration in connection with the age at which pullets commence to lay.

Among the more important climatic conditions affecting egg production that surround a flock of fowls during the various seasons of the year, are excessive heat or cold, protracted drought or rainfall, the number of hours of sunshine or cloudy conditions, which affect the nature of the food supply, the activity of the birds, and their personal comfort and contentment. These, to a large degree, influence the productivity of the birds. So well established has this fact become that the most experienced practical poultrymen now generally understand the great importance of having chickens hatched at a certain time of the year in order to have the pullets reach the normal laying age at a definite time of the year which has been found, by practical experience, to be most conducive to the largest egg yield. It has been observed that with any given variety of fowls in any particular part of the country, if the chickens are hatched too early or too late, that they mature and commence to lay when the climatic conditions are likely to be either too hot or too cold, too wet or too dry, or to involve some other environmental influence that does not satisfy the most desirable conditions for securing a maximum egg yield at a time when eggs are most desired; namely, in this State during the Fall and early Winter months.

If the time of hatching does affect the way in which fowls distribute their production it becomes of vital
importance, in studying the individual records of fowls with regard to inheritance of fecundity characters, to consider the time of hatching of each bird before we pass final judgment on her productive qualities. It is well, also, to inquire, when comparing the productivity of individuals or flocks, not only as to the time of hatching, but also as to the method of rearing, handling and care. This is particularly important where the method of selection is based upon the number of eggs produced by an individual when she has reached a certain age, or at a certain date; for example, when ten months old or by March 1st or the first year etc.

laying. The third group apparently was hatched a little too late to fully mature and commence to lay before extremely cold weather occurred and normally would be expected, except under the most favorable conditions of rearing and desirable fall weather, to give less satisfactory fall and early winter egg yield than the earlier hatches. The annual production of each fowl, the total and the average for three years, is given in Table I. In Figure I is shown graphically the curves of production for each group in four-week periods for three years. The daily production of each fowl for three years, arranged in three groups based on the time of hatching each

As a mere suggestion of the importance of knowing the time of hatching as affecting the production of individuals or flocks, some of the results of a study of the distribution of egg production of sixty-three fowls for three years is here shown. The fowls are all Single Comb White Leghorns. They were hatched and reared under essentially similar conditions and include all of the individuals of the flock that lived to complete three years or more. Of the sixty-three fowls, twenty-two were hatched May 2nd, twenty-one May 20th, and twenty-one May 31st. The first two groups were hatched at a time which, in Central New York, normally would be considered desirable for fall and early winter

![Image](image-url)

**FIG. 1.—NOTE THE REGULARITY WITH WHICH THE CURVES OF EGG PRODUCTION RISE AND FALL IN CONFORMITY TO SEASON AND THE TENDENCY OF PULLETS TO COMMENCE TO LAY, AND HENS TO RENEW PRODUCTION IN THE EARLY WINTER AFTER MOLTING.**

It should be understood that the purpose in presenting these data is not to submit proof that the time of hatching is the sole cause of the wide difference in the production of the three groups hatched at different times of the year, but rather to point out the importance of considering the possible influence that the time of hatching may have on the distribution of egg production and the number of eggs laid in any given year or period of years.

The egg production of the May 31st hatch when compared with the average for the three groups shows that the
difference in production is, for the first year, 134.19 as against 118.60 or a difference of 15.59 eggs per hen; for the second year 122.62 as against 112.75, a difference of 9.87 eggs per hen; and when compared to the May 20th hatch, the difference is, for the first year, 142.00 as against 118.60 or 23.4 eggs per hen; for the second year, 133.95 as against 112.75 or an average of 21.20 eggs per hen, and for the third year 124.57 as against 104.70 or a difference of 19.87 eggs per hen, in every instance showing a decidedly smaller average egg yield for the 20 hens in the group hatched May 31st.

A study of Figure II and Table I reveals the fact that a few high record individuals are found in each of the three groups. For example the eleven fowls that laid an average of 150 eggs or more per year for three years laid as follows:

<table>
<thead>
<tr>
<th>Group I</th>
<th>Hen Av. per hen</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Av. for 3 yrs.</td>
</tr>
<tr>
<td>7460</td>
<td>158.67</td>
</tr>
<tr>
<td>7466</td>
<td>165.33</td>
</tr>
<tr>
<td>7534</td>
<td>157.33</td>
</tr>
<tr>
<td>7578</td>
<td>164.33</td>
</tr>
<tr>
<td>7518</td>
<td>164.33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group II</th>
<th>Hen Av. per hen</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Av.</td>
</tr>
<tr>
<td>5702</td>
<td>155.67</td>
</tr>
<tr>
<td>5697</td>
<td>183.67</td>
</tr>
<tr>
<td>5626</td>
<td>176.33</td>
</tr>
<tr>
<td>5727</td>
<td>151.00</td>
</tr>
<tr>
<td>5653</td>
<td>160.33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group III</th>
<th>Hen Av. per hen</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Av.</td>
</tr>
<tr>
<td>7880</td>
<td>151.67</td>
</tr>
<tr>
<td>7851</td>
<td>151.33</td>
</tr>
</tbody>
</table>

A larger number, and these also higher producing fowls, it will be seen are found in the two earlier hatches. It would appear that the time of hatching of group 3 was a handicap to production not only the first fall and winter but also for the first year and for each year thereafter. Whatever may have been the cause of this difference in production, whether time of hatching or heredity, the result is certain that in this one instance the May 31st hatch, gave a much lower yield. This might be due to a difference in the natural productivity of the fowls in the third group as compared to each of the other groups, or it is possible, in fact, quite probable, that the difference in yield may be attributed to the seasonal conditions affecting the growth of the chickens or their productivity.

It will be seen by referring to Fig. II that a majority of the pullets in each group began to lay essentially in the order of the dates when they were hatched, and that some of the late-to-lay pullets in the early hatches did not commence to lay until after the earlier-to-lay pullets of the later hatches began to lay. It indicates the desirability of hatching chickens at various times during the best hatching season of any region with the expectation of securing a better distribution of production throughout the fall and winter than one would be likely to secure if all the chickens were to be hatched at the same time or within a short period of time. A careful examination of the daily and monthly records of various fowls in each group as shown in Table I and Fig. II will indicate that after a fowl has laid heavily for a considerable length of time, there is a tendency to decrease in production, and to rest or to become broody. It is desirable, therefore, to have the time of hatching so arranged that when one flock is declining in production, other flocks, hatched a little later, are commencing to lay. By so doing, it is apparent that under normal conditions one may expect to secure and maintain a fairly uniform daily production, by arranging to have his hatching properly timed to fit the season in the particular region in which he lives. It is reasonable to suppose that the same difference in egg yield might not occur every year between flocks hatched May 2 and May 20 and May 31st, as is shown in the data here studied. The environmental conditions are not likely to be the same each year. Hence, hatching at the same date each year would not of necessity be expected to give the same comparative results as here shown. If the records of flocks hatched at widely different times, ranging from March 1st to July 1st were to be compared, unquestionably
## DAILY DISTRIBUTION OF EGG PRODUCTION

OF 63 S.E. WHITE LEGHORN For 3 YEARS AT CORNHILL

ARRANGED ACCORDING TO THE DATE OF HATCHING AND PRODUCTION OF SOUTH TAKING

<table>
<thead>
<tr>
<th>MONTH</th>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
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<tbody>
<tr>
<td>TOTAL</td>
<td></td>
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<td></td>
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### FIRST YEAR

<table>
<thead>
<tr>
<th>MONTH</th>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
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</table>

### SECOND YEAR

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<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
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### THIRD YEAR

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<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
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<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
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<th>OCTOBER</th>
<th>NOVEMBER</th>
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<td>TOTAL</td>
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</tbody>
</table>
DISTRIBUTION OF CALENDAR YEAR EGG PRODUCTION OF 63 S. C. WHITE LEGHORNS FOR THREE YEARS AT CORNELL, ARRANGED IN THREE GROUPS ACCORDING TO DATE OF HATCHING AND IN EACH GROUP ACCORDING TO THE PRODUCTION OF FIRST EGG.

Illustrated graphically in Fig. I "Influence of time of hatching on the monthly distribution of egg production," and Fig. II "Daily Distribution of Egg Production" and Figs. III and IV, Part III April number "Cornell Countryman", showing the fluctuations in rating of fowls according to eight methods of comparing their relative productivity.

| Group I—Twenty-seven fowls, Twenty-two of which lived three years. Hatched May 2. |
| Band | Egg Production | Total Av. for No. 1st yr. 2nd yr. 3rd yr. 3 yrs. 3 yrs. |
| 7460 | 203 | 150 | 123 | 476 | 158.67 |
| 7468 | 216 | 153 | 131 | 496 | 165.33 |
| 7522 | 141 | 123 | 126 | 390 | 130.00 |
| 7492 | 118 | 104 | 124 | 346 | 115.33 |
| 7481 | 117 | 111 | 144 | 372 | 144.00 |
| 7517 | 144 | 120 | 86 | 350 | 116.67 |
| 7472 | 157 | 112 | 92 | 361 | 120.33 |
| 7542 | 97 | 112 | 92 | 301 | 100.33 |
| 7590 | 136 | (74) |
| 7420 | 155 | (4) |
| 7572 | 123 | 64 |
| 7543 | 179 | 82 | 83 | 344 | 114.67 |
| 7534 | 190 | 155 | 127 | 472 | 157.33 |
| 7477 | 173 | 147 | 119 | 439 | 146.33 |
| 7503 | 157 | 127 | 137 | 421 | 140.33 |
| 7540 | 150 | 137 | 120 | 407 | 135.97 |
| 7512 | 129 | 134 | 147 | 410 | 136.67 |
| 7518 | 221 | 163 | 109 | 493 | 164.33 |
| 7473 | 116 | 106 | 82 | 334 | 101.33 |
| 7538 | 105 | 114 | 87 | 306 | 102.00 |
| 7458 | 138 | 107 | 105 | 350 | 116.67 |
| 7549 | 151 | 152 | (126) |
| 7536 | 138 | 124 | 108 | 370 | 123.33 |
| 7510 | 134 | 175 | (87) |
| 7504 | 83 | 86 | 57 | 226 | 75.33 |
| 7403 | 87 | 115 | 114 | 316 | 105.33 |
| 7511 | 45 | 75 | 69 | 189 | 63.00 |
| Total 3799 | 3048 | 2352 | 8109 |
| Av. 140.70 | 121.92 | 106.91 | 368.59 | 122.86 |

Group II—Twenty-eight Fowls, twenty-one of which lived three years. Hatched May 20.—Continued.

| Band | Egg Production | Total Av. for No. 1st yr. 2nd yr. 3rd yr. 3 yrs. 3 yrs. |
| 5719 | 147 | 113 | 112 | 372 | 124.00 |
| 5715 | 148 | 136 | 155 | 439 | 149.33 |
| 5727 | 169 | 139 | 145 | 433 | 151.00 |
| 5755 | 153 | 175 | 151 | 481 | 160.33 |
| 5720 | 138 | 133 | 148 | 419 | 139.67 |
| 5705 | 111 | 123 | 123 | 357 | 119.00 |
| 5724 | 124 | 137 | 102 | 353 | 121.00 |
| 5734 | 115 | 170 | 148 | 430 | 143.33 |
| 5735 | (90) |
| 5709 | 133 | (52) |
| 5733 | 159 | 114 | 133 | 406 | 135.33 |
| 5720 | 97 | (16) |
| 5701 | 86 | 54 | 54 | 194 | 64.67 |
| 5707 | 155 | 127 | 96 | 445 | 148.33 |
| 5744 | 128 | 105 | 132 | 345 | 114.67 |
| 5785 | 68 | 80 | 80 | 230 | 76.67 |
| 5780 | 87 | 140 | 108 | 335 | 111.67 |
| 5750 | 113 | 139 | 137 | 350 | 126.67 |
| 5721 | 108 | (113) |
| 5708 | 151 | 142 | 133 | 426 | 142.00 |
| Total 3609 | 2952 | 2616 | 8411 |
| Av. 138.18 | 144.18 | 124.57 | 400.52 | 133.51 |

Group III—Twenty-two Fowls, twenty of which lived three years. Hatched May 31.

| Band | Egg Production | Total Av. for No. 1st yr. 2nd yr. 3rd yr. 3 yrs. 3 yrs. |
| 7859 | 149 | 138 | 115 | 402 | 134.00 |
| 7852 | 127 | 112 | 95 | 334 | 111.33 |
| 7872 | 117 | 110 | 122 | 349 | 116.33 |
| 7860 | 106 | 72 | 58 | 236 | 78.67 |
| 7883 | 86 | 98 | 96 | 280 | 93.33 |
| 7880 | 131 | 145 | 159 | 455 | 151.67 |
| 7857 | 156 | 121 | 103 | 393 | 131.00 |
| 7566 | (157) |
| 7807 | 137 | 124 | 139 | 400 | 133.33 |
| 7800 | 152 | 135 | 141 | 428 | 142.67 |
| 7873 | 128 | 140 | 87 | 355 | 118.33 |
| 7874 | 137 | 151 | (40) |
| 7851 | 147 | 154 | 153 | 454 | 151.33 |
| 7861 | 164 | 137 | 117 | 418 | 139.33 |
| 7668 | 106 | 101 | 114 | 321 | 107.00 |
| 7575 | 153 | 128 | 124 | 405 | 135.00 |
| 7579 | 80 | 60 | 71 | 211 | 70.33 |
| 7576 | 140 | 149 | 131 | 420 | 140.00 |
| 7585 | 45 | 53 | 66 | 163 | 54.33 |
| 7585 | 70 | 84 | 71 | 225 | 75.00 |
| 7852 | 76 | 75 | 80 | 231 | 77.00 |
| 7680 | 69 | 119 | 53 | 241 | 80.33 |

Total 3799 | 3048 | 2352 | 8109 |
| Av. 140.70 | 121.92 | 106.91 | 368.59 | 122.86 |

*Average includes all those fowls that completed full year records. Incomplete years are shown in ( ).
even wider contrast in production than here shown would be found. The pullets that were hatched too early would be expected to commence to lay in July or August and would be likely to molt in October and November, whereas those that were hatched too late would not be fully feathered and matured before the cold weather of November and December set in and as a result would be likely to be unproductive until toward spring.

The observation of flocks not included in the data here shown justifies the belief that the time limits for hatching Single Comb White Leghorns, to secure the most satisfactory results in fall and winter laying in the region of Central New York, one year with another, is about the first week in April to the last week in May.

Some interesting lessons in distribution of egg production may be drawn from the variations in the curves of production, Figure I, for each flock each month each year, and for the same curve in succeeding years and in Fig. II showing by the “inked-in” spaces the days when each hen laid. The months of most favorable production each year it will be seen are the middle of March to the middle of July, and the lowest production is uniformly during those seasons of most unfavorable climatic conditions; namely, the middle of September to the middle of January. Each succeeding year the hens decrease the percentage production during the unfavorable season and lengthen the period of low production, while maintaining as high or higher percentage egg yield for a shorter and shorter time during the favorable season. In other words, the older the fowls become, the slower they are to commence to lay in the fall and the earlier they are to cease to lay toward the close of the year the following fall, and also, the older the fowls are, the shorter becomes the period when high production is secured until, eventually, it is found that very old fowls lay less and less percentage production each year and that these eggs are laid only during the natural mating season, which is also the most favorable season of the year. This period, in New York State, is April and May, but differs very materially in various regions of the country.

**Part II**

In what year do hens normally lay their highest, medium or lowest production?

It is apparent from studies of egg production, that hens differ widely in the manner of distributing their egg yield over a period of years. This apparently is both an individual and a breed or variety characteristic. A study of Table II will show how the annual egg yield of 169 S. C. White Leghorn fowls varies under central New York conditions and Cornell University methods. For the sake of comparison the fowls are classified into several groups, based on the year when they made their highest, medium or lowest production each year for three years. Nine combinations, not including those in which the yield is the same for any two years, are possible and are used in Table II as follows:

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st,</td>
<td>highest</td>
<td>medium</td>
</tr>
<tr>
<td>2nd,</td>
<td>lowest</td>
<td>medium</td>
</tr>
<tr>
<td>3rd,</td>
<td>highest</td>
<td>lowest</td>
</tr>
<tr>
<td>4th,</td>
<td>lowest</td>
<td>highest</td>
</tr>
<tr>
<td>5th,</td>
<td>medium</td>
<td>highest</td>
</tr>
<tr>
<td>6th,</td>
<td>medium</td>
<td>lowest</td>
</tr>
</tbody>
</table>
|           |          |           | and so on.

To make the group comparisons clearer a different kind of type is used in Table II, to indicate the years when each group made its highest, medium or lowest production. It will be seen that by far the larger number of the 169 fowls under consideration, namely, 47.34% fall into the class that lay in the order of most eggs the first year (158); less the second year (127); and least the third (102), a total for three years of 389.19 eggs. The third, fourth and fifth groups are equal in point of numbers, namely, 12.43% each, the third group laying the most the first year (149) eggs; least the second
year (111); and more the third year (120), a total for three years of (382.19) while the fourth group laid least the first year (95) eggs, most the second (134) and medium production the third year (119), or a total of 349.29 eggs in three years.

The fifth group laid medium production the first year (119); highest the second year (133), and lowest the third year (121), and highest production the third year (138), a total of 389.82 eggs for three years, whereas in group 6 they laid medium production the first year (130) eggs; lowest the second year (121), and highest production the third year (138), a total of 389.82 eggs for three years, which was the highest average production of any of the first six groups mentioned. The other five groups can scarcely be compared with the six preceding groups because of the fact that the same number of eggs were laid each year for two years. It is interesting however to note, that the highest total yield for three years was in group 10, where the record of only one fowl is shown which laid a high average sustained yield for three years (147) the first, (147) the second and (132) the hen, third or a total of 426 eggs. This however, was not the highest producing individual among the 169 under observation. The two most prolific hens are in groups 3 and 5.

The uniformly high yield of hen Number 3418 "Cornell Supreme" of (222) first year, (223) the second year, (220) the third year, an average of (221) each year, or a total of 665 eggs for three years is remarkable. The very high producing birds are found more largely in groups 1, 3 and 5. The egg production of the ten more prolific hens for three years is as follows:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>3113</td>
<td>80</td>
<td>158.68</td>
<td>127.60</td>
<td>102.91</td>
<td>389.19</td>
<td>(3)</td>
</tr>
<tr>
<td>II</td>
<td>5620</td>
<td>8</td>
<td>91.00</td>
<td>107.88</td>
<td>115.25</td>
<td>314.13</td>
<td>(8)</td>
</tr>
<tr>
<td>III</td>
<td>8362</td>
<td>21</td>
<td>149.86</td>
<td>134.29</td>
<td>119.52</td>
<td>382.67</td>
<td>(7)</td>
</tr>
<tr>
<td>IV</td>
<td>8483</td>
<td>21</td>
<td>119.05</td>
<td>133.90</td>
<td>99.38</td>
<td>352.33</td>
<td>(6)</td>
</tr>
<tr>
<td>V</td>
<td>3352</td>
<td>21</td>
<td>134.29</td>
<td>119.52</td>
<td>138.09</td>
<td>389.82</td>
<td>(5)</td>
</tr>
<tr>
<td>VI</td>
<td>8520</td>
<td>11</td>
<td>130.45</td>
<td>121.27</td>
<td>130.50</td>
<td>382.25</td>
<td>(4)</td>
</tr>
<tr>
<td>VII</td>
<td>3418</td>
<td>2</td>
<td>86.00</td>
<td>129.50</td>
<td>129.50</td>
<td>359.00</td>
<td>(11)</td>
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<tr>
<td>VIII</td>
<td>8686</td>
<td>11</td>
<td>80.00</td>
<td>72.00</td>
<td>72.00</td>
<td>224.00</td>
<td>(1)</td>
</tr>
<tr>
<td>IX</td>
<td>147.00</td>
<td>1</td>
<td>129.50</td>
<td>130.50</td>
<td>130.09</td>
<td>382.09</td>
<td>(2)</td>
</tr>
<tr>
<td>X</td>
<td>3418</td>
<td>2</td>
<td>86.00</td>
<td>129.50</td>
<td>129.50</td>
<td>359.00</td>
<td>(11)</td>
</tr>
<tr>
<td>XI</td>
<td>80.00</td>
<td>1</td>
<td>72.00</td>
<td>80.00</td>
<td>80.00</td>
<td>232.00</td>
<td>(9)</td>
</tr>
</tbody>
</table>

Distribution of Egg Production by One Year Periods as an Indication of Prolificacy Three Calendar Year Record of 169 S. C. White Leghorn Hens at Cornell University.
It will be seen that Group 6, containing eleven fowls, or 6.51%, by well sustained, moderately high yield for three years, attained a rank of second place among the six groups, based on three years' production. In making selections for the breeding flock, one must give reasonably good hens the "benefit of the doubt". Many of these, by maintaining a high or a medium to high average production for a period of years, frequently make exceptionally good records as long-distance-laying hens. From the records of such hens as the fifteen selected from Table I, whose records follow, Table III we are forced to realize that we should not so far lose ourselves in our quest for the so called "200 egg hen" that we fail to appreciate and give full credit to the staying qualities of the "150 egg hen". Perhaps herein lies our greatest hope for permanent development of the most profitable strain of fowls for egg production.

The annual egg production of fifteen fowls whose records for three years are over 400 eggs per hen and none of which did not exceed 150 eggs per hen the first year.

(From record of 63 hens Table I).

<table>
<thead>
<tr>
<th>Leg Band No.</th>
<th>First Year Egg Production</th>
<th>Second Year Egg Production</th>
<th>Third Year Egg Production</th>
<th>Eggs Produced in Three Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>7897</td>
<td>137</td>
<td>124</td>
<td>139</td>
<td>400</td>
</tr>
<tr>
<td>7859</td>
<td>149</td>
<td>138</td>
<td>115</td>
<td>402</td>
</tr>
<tr>
<td>7573</td>
<td>153</td>
<td>128</td>
<td>124</td>
<td>405</td>
</tr>
<tr>
<td>7540</td>
<td>150</td>
<td>137</td>
<td>120</td>
<td>407</td>
</tr>
<tr>
<td>7513</td>
<td>129</td>
<td>134</td>
<td>147</td>
<td>410</td>
</tr>
<tr>
<td>5320</td>
<td>138</td>
<td>133</td>
<td>148</td>
<td>419</td>
</tr>
<tr>
<td>7675</td>
<td>140</td>
<td>149</td>
<td>131</td>
<td>420</td>
</tr>
<tr>
<td>7503</td>
<td>157</td>
<td>127</td>
<td>137</td>
<td>421</td>
</tr>
<tr>
<td>5708</td>
<td>151</td>
<td>142</td>
<td>133</td>
<td>426</td>
</tr>
<tr>
<td>7700</td>
<td>152</td>
<td>135</td>
<td>141</td>
<td>428</td>
</tr>
<tr>
<td>5675</td>
<td>148</td>
<td>136</td>
<td>155</td>
<td>439</td>
</tr>
<tr>
<td>5674</td>
<td>148</td>
<td>165</td>
<td>132</td>
<td>445</td>
</tr>
<tr>
<td>7851</td>
<td>147</td>
<td>154</td>
<td>153</td>
<td>454</td>
</tr>
<tr>
<td>7880</td>
<td>151</td>
<td>145</td>
<td>159</td>
<td>455</td>
</tr>
<tr>
<td>5653</td>
<td>155</td>
<td>175</td>
<td>151</td>
<td>481</td>
</tr>
</tbody>
</table>

It is apparent, from these records, that if one selects the birds that made their highest or very high records either in the first or second year, he will be likely to secure most of the high producing fowls in the flock.

We hear much about breeding from the "highest," "medium," or "lowest," producing birds. There is practically no agreement among poultrymen as to just what these terms,—"highest," "medium," "lowest," signify. To one person "highest" means two hundred, or one hundred and seventy-five, or one hundred and fifty eggs per year: to another it means three hundred or three hundred and fifty, or four hundred eggs in two years, or perhaps four hundred and fifty, five hundred and fifty, or six hundred and fifty eggs in three years, or thirty eggs or more by March 1st, or thirty-five or more at ten months of age, etc. There are nearly as many opinions on this question as there are persons expressing them. If practical poultrymen and investigators alike are not agreed as to the number of eggs that hens should be expected to lay within any particular time, or the length of time that should be taken as a reliable measure of a hen's productive capacity; what, then, shall be the standard and what shall be the terms to describe differences in laying capacity? Shall our measure be applied to the number of eggs laid within a short or long span of time, and where shall the line be drawn that is to separate the high from the medium and the medium from the low producing individuals? If it were found that fowls at all ages are consistently high, medium or low producers the problem would be comparatively simple. It is found, however, as these data clearly show, that not only do hens vary between wide limits in the number of eggs that they lay when compared with one another, but the production of each individual varies radically during various periods of her life (Tables I, II, III, IV, V and VI). This makes it doubly difficult to decide upon any particular number of eggs that a high, medium or low producer should lay in order to fall into any specified group, and equally difficult to decide upon a definite time or times in the life of a fowl when one would be certain or be likely to get the most reliable estimate of her laying power.
**DISTRIBUTION OF EGG PRODUCTION**

*EGG PRODUCTION OF SIX HIGHEST, SIX MEDIUM AND SIX LOWEST PRODUCING FOWLS FOR THREE YEARS.

**Table IV.**

Rating of 38 hens based upon the first 10 months' production from date of hatching and shown number of eggs laid per hen per year for a period of years.

<table>
<thead>
<tr>
<th>Six Highest Producers</th>
<th>Age laid 1st egg.</th>
<th>First 10 months</th>
<th>To March 1st.</th>
<th>1st year.</th>
<th>2nd year.</th>
<th>1st and 2nd years.</th>
<th>3rd year.</th>
<th>3rd yrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3352</td>
<td>202</td>
<td>71</td>
<td>56</td>
<td>210</td>
<td>194</td>
<td>379</td>
<td>163</td>
<td>539</td>
</tr>
<tr>
<td>3211</td>
<td>203</td>
<td>71</td>
<td>56</td>
<td>210</td>
<td>194</td>
<td>379</td>
<td>163</td>
<td>539</td>
</tr>
<tr>
<td>3418</td>
<td>200</td>
<td>66</td>
<td>50</td>
<td>220</td>
<td>201</td>
<td>441</td>
<td>220</td>
<td>649</td>
</tr>
<tr>
<td>3687</td>
<td>199</td>
<td>55</td>
<td>46</td>
<td>202</td>
<td>146</td>
<td>348</td>
<td>121</td>
<td>469</td>
</tr>
<tr>
<td>3113</td>
<td>220</td>
<td>57</td>
<td>42</td>
<td>200</td>
<td>167</td>
<td>367</td>
<td>162</td>
<td>529</td>
</tr>
<tr>
<td>3511</td>
<td>213</td>
<td>54</td>
<td>40</td>
<td>179</td>
<td>96</td>
<td>275</td>
<td>97</td>
<td>372</td>
</tr>
</tbody>
</table>

Six medium Producers

| 3097                  | 210               | 33             | 35           | 147       | 96        | 243               | 73        | 316     |
| 3079                  | 207               | 32             | 32           | 169       | 168       | 337               | 112       | 449     |
| 3336                  | 188               | 31             | 15           | 143       | 117       | 260               | 104       | 364     |
| 3097                  | 209               | 29             | 31           | 144       | 117       | 261               | 103       | 364     |
| 3189                  | 240               | 28             | 15           | 126       | 147       | 273               | 130       | 403     |
| 3477                  | 254               | 26             | 15           | 148       | 161       | 309               | 144       | 453     |

Six lowest Producers

| 3276                  | 258               | 12             | 6            | 106       | 126       | 232               | 145       | 377     |
| 3072                  | 208               | 11             | 14           | 126       | 137       | 263               | 140       | 403     |
| 3332                  | 296               | 6              | 0            | 50        | 60        | 113               | 41        | 154     |
| 2976                  | 262               | 3              | 3            | 113       | 105       | 218               | 111       | 319     |
| 6087                  | 292               | 1              | 0            | 89        | 156       | 245               | 140       | 385     |
| 3655                  | 313               | 0              | 0            | 66        | 154       | 220               | 129       | 349     |

**Table V.**

"Rating" of 38 hens based upon Egg Production of Six Highest, Six Medium and Six Lowest Producing Hens for a period of years.

<table>
<thead>
<tr>
<th>Six Highest Producers</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3352</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3211</td>
<td>12</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3418</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>3687</td>
<td>23</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3113</td>
<td>18</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>13</td>
</tr>
</tbody>
</table>

Six medium Producers

| 3097                  | 17| 17| 11| 15| 23| 34|
| 3079                  | 14| 18| 14| 10| 3 | 7 |
| 3336                  | 5 | 19| 23| 20| 23| 19|
| 3097                  | 16| 20| 15| 18| 24| 18|
| 3189                  | 28| 21| 24| 23| 9 | 14|
| 3477                  | 30| 22| 25| 13| 5 | 9 |

Six lowest Producers

| 3276                  | 31| 33| 32| 32| 16| 27|
| 3072                  | 15| 34| 28| 24| 13| 17|
| 3332                  | 37| 35| 36| 38| 38| 37|
| 3097                  | 36| 36| 33| 28| 26| 30|
| 6087                  | 35| 37| 37| 35| 6 | 22|
| 3655                  | 38| 38| 38| 36| 7 | 28|

*From continued article on "Distribution of Egg Production," CORNELL COUNTRYMAN, February, March and April, 1913."
The differences in egg production of certain fowls for three years.

Table VI.

<table>
<thead>
<tr>
<th>Hen No.</th>
<th>First 10 months</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>1st and 2nd Years</th>
<th>3rd Year</th>
<th>3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>3211</td>
<td>72</td>
<td>248</td>
<td>200</td>
<td>448</td>
<td>201</td>
<td>649</td>
</tr>
<tr>
<td>3352</td>
<td>92</td>
<td>230</td>
<td>146</td>
<td>376</td>
<td>163</td>
<td>539</td>
</tr>
<tr>
<td>3516</td>
<td>53</td>
<td>173</td>
<td>136</td>
<td>309</td>
<td>111</td>
<td>423</td>
</tr>
<tr>
<td>3079</td>
<td>32</td>
<td>189</td>
<td>168</td>
<td>337</td>
<td>112</td>
<td>449</td>
</tr>
<tr>
<td>3189</td>
<td>28</td>
<td>126</td>
<td>147</td>
<td>218</td>
<td>130</td>
<td>403</td>
</tr>
<tr>
<td>3249</td>
<td>25</td>
<td>123</td>
<td>90</td>
<td>213</td>
<td>92</td>
<td>305</td>
</tr>
<tr>
<td>3276</td>
<td>12</td>
<td>106</td>
<td>126</td>
<td>232</td>
<td>145</td>
<td>377</td>
</tr>
<tr>
<td>3348</td>
<td>14</td>
<td>91</td>
<td>93</td>
<td>184</td>
<td>51</td>
<td>235</td>
</tr>
<tr>
<td>2976</td>
<td>3</td>
<td>113</td>
<td>105</td>
<td>218</td>
<td>111</td>
<td>329</td>
</tr>
<tr>
<td>3498</td>
<td>45</td>
<td>113</td>
<td>82</td>
<td>195</td>
<td>91</td>
<td>286</td>
</tr>
<tr>
<td>Diff.</td>
<td>-42</td>
<td>0</td>
<td>+23</td>
<td>+23</td>
<td>+20</td>
<td>+43</td>
</tr>
</tbody>
</table>

The records of egg production for individuals or groups for one, two or three or more years, or two or three or more years combined, show conclusively that fowls differ in the number of eggs that they lay, whether we consider their records for a short or a long period of time, and that these differences vary in the case of the records of 169 fowls (Table II) from no eggs to 248 for the first year, from no eggs to 223 eggs the second year, from 3 eggs to 220 the third year, and from 3 eggs to 665 in three years.

It is also shown that egg production varies by differences of only one or more eggs per hen when we compare them by any of the known methods of rating. It seems clear, therefore, that fowls do not fall into any well defined classes or groups, such as "high" "medium" or "low" producers, into which all or any considerable number of fowls might be placed. Hence, it remains for man to classify fowls according to their production into such groups as best serve his particular purpose, with the understanding that there can be no clean-cut line dividing the high from the medium and the medium from the low producers. It should also be understood that, in the absence of any natural grouping, if any arbitrary system of classification be adopted for any particular period of time, that the hens would have to be reclassified whenever their records for a different period of time is considered. Just because a hen lays more eggs than another for one year, does not necessarily indicate that she will be a better producer than the other the next year. This fact is clearly indicated in Table VI, where the relative merits of several fowls are compared with reference to one another for a period of years. The "+" and "-" marks indicate whether or not a hen is higher or lower in her production than the one with which she is being compared.

The way in which each fowl varies in her egg production, month by month and year by year, and the way in which fowls of the same variety, age, breeding and care differ in their laying powers from one another, makes the problem of deciding what particular birds should be honored or discredited in mating up our breeding pens or working out our breeding equations an exceedingly hazardous undertaking. The fact that man has placed upon the hens the responsibility of living up to the good or bad "character" that he has given them in his formulas on the assumption that, as layers, they possess the high, medium or low, or absence of fecundity character is asking a good deal of innocent subjects. The responsibility is greater than most persons or hens will care to assume with our present knowledge of the laws governing inheritance of the fecundity character.
IMPORTANT PHASES IN THE DEVELOPMENT OF BETTER MARKETS

BY EARL W. BENJAMIN '11
Assistant Professor, Poultry Department, N. Y. S. College of Agriculture at Cornell University

Is it any wonder that our markets are in a chaotic condition? I refer to the condition as chaotic because it is decidedly unorganized; we have not been able, for the most part, to digest the principles which should guide our move. The present systems, or rather methods, since we cannot dignify them by the term "system," have just naturally developed along the lines of least resistance. They were never "hatched," they just grew. They are natural fruit, borne upon the ungrafted stock with roots extending back to the beginnings of trade relations between men.

Poultry products are perishable so the poultrymen should be intensely interested in the very best method of selling them; for the same reason the consumer should be vitally interested in the very best method of buying them. Here, I say "should be interested" because that is all that can be said up until very recently. We have all been asleep! not a single man awake! until a while ago the residents of our large cities were startled to find that the cost of food products was becoming prohibitive.

The wave of inquiry relative to the High Cost of Living rolled up to the shop of the middleman; here no satisfaction was obtained because it was found that the great mass of middlemen were making only meagre profits. The inquirers were respectfully referred to the farmers, but here they received their most serious disappointment when they learned that the farmers were scarcely making a living and had in many cases abandoned all hopes of doing better, moved to the city, and even found themselves, a few years later, one of this same crowd of inquirers.

This was indeed chaos: The baffled inquirers turned upon themselves; they blamed each other, and everybody else. Some blamed the extravagances of the consumers; others the increased population; different money values; dishonest middlemen; too many dealers; losses due to deterioration; poor farming methods; gradual depletion of the humus; not enough farmers; railroad freight rates, express rates; expensive delivery systems; tariff; laziness and negligence of the age; and everything else imaginable and unimaginable. Since this baffling and asundering of the united forces of public sentiment, every thinker has developed individual ideas of how the buying and selling markets might be improved. These ideas usually provide for larger relative returns for the producers and lower relative charges to the consumers.

It is a general principle that the longer a perishable product is held, or

It is the problem of the producer to satisfy the consumer. A glance at the complexity of the consumer's interest shows us at once the impossibility of the average producers attempting to deal direct with the consumer.
the more times it is handled, the poorer will be its quality and the higher will be its price. This furnishes fertile soil for the development of an apparently simple market scheme, whereby the consumers and producers shall deal directly together. This was the condition when trading began during the past ages, and during the early days of our own country. Business then was so simple and so limited that every consumer could meet the producer of his products and select these products according to his own fancies. Time was then cheap; our social life was not so exacting; the market place was sort of a social gathering place; telephones were not available; the people were a race of producers, i. e., they were not far removed from the soil; their wants were not extensive; they were satisfied with the quality of product received.

Conditions have now changed and we must accept this fact with all its meaning. It means that the interests of both the men and the women have become so urgent and so complicated that certain of these interests are being continually split off and left for specialists to manage. Thus experts do the tailoring, barbering, road making, shoe making, wagon building, horse shoeing, doctoring, preaching, running our errands. Experts are doing our manufacturing, and to some extent our farming. This same tendency towards specialization is bound to take hold of our marketing. It is taking hold, as will be at once seen if products are handled and where the producers get in closer touch with the customers through an expert salesman. The handling of these non-perishable products, however, offer a problem differing greatly from the problem of marketing perishable products.

In the scramble for a solution to the market problem it was at first suggested that the middlemen should be eliminated. This was the cry on every hand, and public sentiment was at once in favor of direct shipments of products from the producers to the consumers. These shipments have proved very satisfactory in some cases but often dissatisfaction arose and justly too, for both parties. Neither the producers nor the consumers were yet sufficiently educated regarding the factors having to do with the quality of food products. The producer did not understand grading and packing and the consumer did not understand how to keep a surplus if she received more than she needed at once. The few instances where direct shipping has succeeded have, however, served to interest both parties in the improvement of conditions and have, on that account, been of great benefit.

Another sign of the times is the recent movement for the establishment of public markets all over the country.
This is another effort to affect the direct dealings between the producers and the consumers. The public market is a replica of ancient customs. It is an effort to have the housewives follow the customs of their ancestors, go to the market and deal directly with the producers of the farm products. It is an ideal arrangement if conditions existed today as during colonial times. But the times have changed.

The great benefit accruing from the public markets now being established is the Education. Every trip a housewife makes to the public market means that she is going to learn that eggs cannot be judged by their freshness, nor the fact that they come straight from the farmer’s hands: She will learn how to recognize the various cuts of meat and the various qualities of dressed poultry. On the other hand, every criticism that the produce receives is a pointer for him. It drives home to him the fact that everything isn’t perfect just because it is produced on his farm. The public market with its customary features of direct dealing and non-deliveries, will always have this educational value and will always prove a blessing to the poorer classes who can get fresh products in no other way.

The public demanded parcel post as a means of stimulating direct trading, and it was obtained. For a few years we have been developing desirable packages for use in sending perishable products by this means. The natural limits to direct dealing seem to be such factors as inconvenience of ordering, damage during transit, expense of package, necessary accounting for both parties, losses due to irresponsible customers, and impatience of both the producer and the consumer. Such factors have probably been the cause for the slow development of the many direct-dealing ideas.

If the public market happens to be controlled by an organization, here is an opportunity for the efficient serving of the community. We then have an organization simply depending upon the farmers and consumers to maintain the business of the organization by trading within the confines of the market. This organization will then soon perceive that it is a waste of time for the individual farmers to come in, each with his own few products, and wait for the customers to buy: It will be noted that the grossest kind of delivery duplication is caused by each housewife delivering her own pro-
ducts: It is a waste of energy to have each housewife hunting through the whole market for the particular quality of product that she wants. These and many other features will be noted by the organization and they will then develop an organization controlling a sales room, where the products will all be combined into certain few and definite grades; experts will be employed for standardizing the products according to these grades; the farmer delivers his goods to the market but does not wait to sell them; the housewife can order products of these different grades intelligently over the telephone or in person; certain regular deliveries will be made covering definite areas to avoid duplication of routes. Now we have a middleman of the highest type of efficiency.

This middleman is the same as all other middlemen should be. He is serving to connect the producers with the consumers. He is an economic necessity in order to properly connect these parties to the satisfaction of both. He is one, not three or four, each to be supported by handling the same product.

The progressive middlemen realize that the efficiency of their work is seriously handicapped by the presence in the field of scores of illegitimate bargainers who insert themselves between the wholesale and the retail dealers. It is the advantage of everyone that the trade routes for our pro-

(COPIED FROM CENSUS REPORTS). NEW YORK CITY IS THE NATURAL CENTER FOR THE POULTRY PRODUCTS OF THE COUNTRY. THE GREAT BULK OF THESE PRODUCTS ARE BEING PRODUCED IN THE MIDDLE WEST, AND MODERN METHODS OF HANDLING ARE BEING RAPIDLY DEVELOPED. A CAREFULLY OUTLINED PLAN OF MARKETING WOULD BE OF INESTIMABLE VALUE FOR THE DISTRIBUTION OF THESE PRODUCTS.
PHASES IN THE DEVELOPMENT OF BETTER MARKETS

thing in their communities that the Poultry Producers' Association and other marketing organizations are attempting to do in other communities. Middlemen in some form are necessary. The only desirability for the establishment of a new marketing agency must be the fact that the present one is unwilling to improve. Give our present middlemen a chance to meet the situation before deciding against them.

After our present middlemen are given an opportunity to develop their organization and correlation in accordance with the desires of the producers and the consumers, a system will be gradually developed whereby the products are collected at shipping stations in the country by one agency; received and distributed to the consumers by another agency; and all this done with a degree of efficiency and punctuality possible only after radical changes from our present methods.

Education must precede these changes. The producers, middlemen, and consumers all need it. We must understand every phase of this work and thus be ready to urge good developments and to discourage useless ones. Interest yourself in the route of the products you sell or buy. Improve this route if you can.

COST OF POULTRY FEEDS

BY A. B. DANN,'14.
Instructor Poultry Department, New York State College of Agriculture, Cornell University

THE enormous exportation of cereals to the warring countries of Central Europe within the past month or two has caused such a rapid rise in the price of wheat that poultrymen everywhere are asking for a substitute to accompany corn and oats as the grain for poultry. We have long ago given up wheat as a feed for the dairy cow, horse, sheep or hog, but because of the very delicate, highly efficient machine with which the poultryman has had to deal, he has been willing, and could well afford to pay the high prices asked for wheat. It has been called the "ideal" poultry food. It is ideal in many respects—in size and color of kernel, in flavor, in its ease of digestion due to the physical condition, and in its nutritive ratio, all of which have added to the value of wheat as an egg producing feed. But even these factors cannot overbalance the excessive cost, since after all it is not so much "how many eggs" as "what is the cost per dozen of producing those eggs?"

A year ago last fall a survey was made of rations for laying hens as recommended by some twenty-five different experiment stations in the United States, Canada and abroad. The remarkable thing about the summarized results was the wide variety of the grains used and the wide difference in the nutritive ratio of these rations. There were twenty-nine different feeds recommended and the nutritive ratio, i.e. the ratio of the number of pounds of protein to the number of pounds of carbo-hydrates and fat—varied from 1:3.9 up to 1:5.9.

From these variable figures, and because of the meager knowledge we have of the hen's digestive power or capacity it is pretty safe to assume that after furnishing the minimum requirement of protein and the highly desirable variety of good, wholesome, palatable poultry feeds, we should work out our egg producing ration almost entirely on an economical basis. That is to say, we should feed those grains and mash foods that are readily available and can be purchased at the lowest cost per one hundred pounds of total nutriment or per unit of producing value.

The following table is worked out
on this basis. Because we have so few digestible coefficients worked out for poultry, it seems advisable to use those for cattle, although it is realized that they are only approximately accurate.

The second column gives the total nutriment of the various feeds listed in column I. This total nutriment is found by adding the total digestible protein and carbohydrates to the total fat multiplied by two and one-fourth. (Protein + C. H. + (Fat × 2.25).) It is considered that one pound of fat is worth as much as two and one-fourth pounds of either protein or carbo-hydrates.

The third column shows the present local price of the feeds per 100 pounds, and the last column shows the computed cost of 100 pounds of total nutriment.

<table>
<thead>
<tr>
<th>Feed</th>
<th>Total Nutriment in 100 lbs.</th>
<th>Price per 100 lbs.</th>
<th>Cost per 100 lbs. T.</th>
<th>Nutriment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>84.3</td>
<td>$1.60</td>
<td>$1.90</td>
<td></td>
</tr>
<tr>
<td>Oats</td>
<td>67.7</td>
<td>1.85</td>
<td>2.73</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>79.7</td>
<td>2.50</td>
<td>3.14</td>
<td></td>
</tr>
<tr>
<td>Buckwheat</td>
<td>61.7</td>
<td>1.50</td>
<td>2.44</td>
<td></td>
</tr>
<tr>
<td>Barley</td>
<td>77.3</td>
<td>1.70</td>
<td>2.20</td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>74.2</td>
<td>2.50</td>
<td>3.37</td>
<td></td>
</tr>
<tr>
<td>Corn Meal</td>
<td>78.3</td>
<td>1.60</td>
<td>2.04</td>
<td></td>
</tr>
<tr>
<td>Ground Oats</td>
<td>70.9</td>
<td>1.85</td>
<td>2.61</td>
<td></td>
</tr>
<tr>
<td>Wheat Midds.</td>
<td>68.8</td>
<td>1.70</td>
<td>2.47</td>
<td></td>
</tr>
<tr>
<td>Wheat Bran</td>
<td>55.5</td>
<td>1.50</td>
<td>2.70</td>
<td></td>
</tr>
<tr>
<td>Alfalfa Meal</td>
<td>52.8</td>
<td>2.00</td>
<td>3.79</td>
<td></td>
</tr>
<tr>
<td>Gluten Feed</td>
<td>80.6</td>
<td>1.65</td>
<td>2.05</td>
<td></td>
</tr>
<tr>
<td>Buckw'h Midds.</td>
<td>73.9</td>
<td>1.60</td>
<td>2.16</td>
<td></td>
</tr>
<tr>
<td>O. P. Oil Meal</td>
<td>77.7</td>
<td>2.00</td>
<td>2.57</td>
<td></td>
</tr>
<tr>
<td>Beef Scrap</td>
<td>96.3</td>
<td>3.00</td>
<td>3.12</td>
<td></td>
</tr>
</tbody>
</table>

It is evident from the table that there is a wide variation in the cost of 100 pounds of total nutriment depending on the grain or feed. At the present prices, corn at $1.60 per 100 pounds is the most economical feed to buy, whereas wheat at $1.50 per bushel, or $2.50 per 100 pounds is practically the most expensive. Thus the real value of a feed is not determined by its cost per 100 pounds, but by the cost per 100 pounds of total nutriment, or if one wishes to be still more accurate, by its cost per unit of producing value measured in energy units.

But we cannot feed all corn, and expect to secure the best results as is suggested by the following table.

**COMPOSITION OF POULTRY, EGGS AND CORN (PER CENT).**

<table>
<thead>
<tr>
<th>Water</th>
<th>Ash</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbo-</th>
<th>Hydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hen's body</td>
<td>55.8</td>
<td>3.8</td>
<td>21.6</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>The Egg</td>
<td>65.7</td>
<td>12.2</td>
<td>11.4</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>10.6</td>
<td>1.5</td>
<td>10.3</td>
<td>5.0</td>
<td>72.6</td>
</tr>
</tbody>
</table>

From this table it is readily seen that corn contains too small a percentage of protein and of ash to supply the body needs of the hen and to produce eggs, or if fed in large quantities to supply the protein, it would represent a waste of carbo-hydrates. This illustrates the necessity for a variety of feeds including some of the protein concentrates such as beef scrap, wheat middlings, oil meal and perhaps gluten feed or the like.

To illustrate how the economic consideration of feeds may enter into the making up of a ration let us consider the Cornell ration for laying hens.

**Standard**

- Corn .......... 60 lbs.
- Wheat .......... 60 lbs.
- Oats .......... 30 lbs.
- Buckwheat ....... 30 lbs.
- Corn Meal ....... 60 lbs.
- Wheat Midds. .... 60 lbs.
- Wheat Bran ....... 30 lbs.
- O. P. Oil Meal .... 10 lbs.
- Alfalfa Meal .... 10 lbs.
- Beef Scrap ...... 50 lbs.
- Salt ........... 7/8 lb.

**Possible Modification**

- Corn .......... 60 lbs.
- Barley .......... 30 lbs.
- Oats .......... 30 lbs.
- Buckwheat ....... 30 lbs.
- Corn Meal ....... 60 lbs.
- Corn Meal ....... 60 lbs.
- Wheat Midds. .... 80 lbs.
- Wheat Bran ....... 40 lbs.
- O. P. Oil Meal .... 10 lbs.
- Alfalfa Meal .... 10 lbs.
- Beef Scrap ...... 50 lbs.
- Salt ........... 7/8 lb.

With the suggested change the nutritive ratio has not been materially changed and we have eliminated the present expensive factor, wheat, and by adding barley and increasing slightly the amount of wheat middlings and wheat bran the physical condition of the ration has not been impaired while the cost has been lowered a trifle over 15 cents per 100 pounds.

Other changes might be made according to the availability and price of feeds. In the northern part of the State where peas are abundant and relatively cheap they make a good substitute; beef scrap purchased in larger quantities at cheaper rates may be increased; fish scrap may be sub-
METHOD OF SELECTING THE HIGH PRODUCING HENS

BY O. B. KENT, '13

Instructor, Poultry Department, New York State College of Agriculture at Cornell University

(Note. There are four main ways to determine the high producers—by the time of molting, color of shanks, texture of comb and color of ear lobes.)

POULTRYMEN generally are more interested in being able to tell the heavy laying than in any other problem that confronts them. Several ‘systems’ of ‘Picking out the laying hens’ have been advertised but as yet, so far as we know, none have been advanced which will work consistently. The following is probably one of the easiest methods of picking out birds which show that they have laid well. No attempt is made to tell production by body conformation.

In applying the following method of picking out the heavy layers it must be borne in mind that in order to lay well birds must have good vigor. Almost any normal sign of high production may be due to a lack of vitality.

The characters to be used in this study of egg production are four in number: 1) time of molting, 2) color of shank, 3) texture of comb, 4) color of ear lobes.

TIME OF MOLTING.

An experiment* carried on in 1907 and 1908 at this station drew attention to the fact that early molters are poor producers and late molters are high producers.** Another series of observations were made approximately October 1st, 1914. It was found that molting is very nearly as good a test of production as color of shank. This may be readily explained on the basis that those hens that molt late have a longer period in which to lay and hence lay more eggs. The distinction should be made that heavy producers molt late and not that the mere fact of late molting makes high producers. Late molting is simply the accompaniment of late laying. This holds true of the second and third year production as well as the third.

The question arises will those hens that molt late be handicapped by a lack of feathers and suffer from the cold and as a result not lay until spring? Almost the reverse seems to be true. Those hens that molt late have begun to lay as early as the early molters. Those that were in full molt October 1st, 1914, have begun to lay slightly ahead of either the early molters or late molters. However, with as early a winter as experienced this year in Ithaca the November and December production was extremely small. Those hens

*See bulletin 258 for further information on molting.

**We have recently found out that some contributors to Farm Poultry observed the late molting and high production phenomena as early as 1902.
that molted late molted much more rapidly than those that molted early and hence lost less time.

COLOR OF SHANKS.

In the summer and fall of 1911 a method of determining the production of fowls by the color of the shanks was obtained. It was found that in the yellow skin breeds, the paleness of shank was a very reliable indication if taken in the fall at the end of the first year. Approximately October 1st,

any bird with yellow shanks after a year of laying whether it be the first, second or third year of egg production has been a poor producer for that year. If a bird starts with pale shanks the shanks will not grow darker and nothing can be told of the egg production from the shanks alone.

TEXTURE OF COMB.

In addition to the observations on shanks and molting a series of observations were made with reference to the texture of the comb. It was found that those birds which had soft and pliable combs when these observations were made, about October 1st, 1914, in general were better producers than those with hard or dried up combs. This may be explained on the basis that as a bird molts its comb tends to shrink and become hard. These birds that are in good condition or are laying have pliable combs. The others do not.

From the three characters, the color of shank, time of molting and texture of comb, a correlation table was constructed to show their relation to egg production. In order to do this it was necessary to grade each factor numerically. All birds which have failed to molt or were just beginning to molt were put in grade 1. A bird that had completed its molt was put in grade 5. Intermediate degrees of molting were numbered 2, 3 and 4. The color of the shanks was graded in the same manner. Those birds having practically no yellow color present in their shanks were put in grade 1. Those having golden yellow shanks were put in grade 5. The intermediate degrees of yellow were numbered 2, 3 and 4. The texture of the comb was graded in exactly the same way. Grade 1 being a soft and pliable comb and grade 5 being a hard and stiff comb. Number 2, 3 and 4 were the intermediate grades. The accompanying table No. 1 shows how the factors were graded and gives an idea how reliable each of the three methods are.
The following correlation table shows how closely the factors agree. The coefficient of correlation is \(0.605 + 0.021\) showing that there is a very strong correlation between a combination of the three factors and egg production. A study of the correlation table shows that very few individuals which scored 6 or less failed to lay more than 120 eggs and that there are comparatively few individuals which scored more than 9 that laid over 100 eggs. This shows that it is readily possible to go through a flock of

| Time of Molt, Color of Shank and Texture of Comb as Indications of Egg Production. |
|---|---|---|---|---|
| Bird No. | Time of Molt | Color of Shank | Texture of Comb | Total Egg Production |
| 3154 | 1 | 1 | 1 | 3 | 173 |
| 3157 | 1 | 1 | 1 | 3 | 224 |
| 3158 | 3 | 2 | 5 | 10 | 92 |
| 3159 | 1 | 1 | 1 | 3 | 177 |
| 3162 | 3 | 1 | 5 | 9 | 119 |
| 3163 | 1 | 2 | 1 | 4 | 187 |
| 3164 | 2 | 1 | 3 | 6 | 155 |
| 3175 | 1 | 1 | 1 | 3 | 257 |
| 3176 | 4 | 2 | 2 | 8 | 121 |
| 3191 | 4 | 2 | 2 | 8 | 106 |

White Leghorn hens about October 1st and tell very closely the hens that have been high producers and those that have been poor producers. A similar correlation table for the second year gives practically the same results.

COLOR OF EAR LOBE.

Very recently it was discovered at the Connecticut Agricultural Experiment Station, Storrs, Conn. and reported in an address before a meeting of the American Association for the Advancement of Science, by Dr. Blakeslee of that Station, that those birds that normally have a considerable amount of yellow pigment in their ear lobes before they begin to lay will lay this yellow color out. For instance, a White Leghorn pullet, before it lays its first egg, will have a bright yellow ear lobe, but after laying its ear lobes will become white. There are some strains of show birds which have been bred for white ear lobes that will apparently not bleach out when the bird lays. However, such strains normally have light colored shanks. After a bird has stopped laying the yellow color will come back into the ear lobes. With White Leghorns, which in most utility strains have bright yellow shanks and hence considerable yellow in the ear lobe, we can tell very closely when a bird begins to lay by simply looking at the ear lobes. It has been shown by this Experiment Station and others that those birds that begin to lay early, if they were hatched at the same time, will normally lay the most eggs in the course of a year since they have a longer time in which to lay. However, the bird should not begin to lay until cool weather, that is, generally some time in October or November. If they begin laying in July or August they will usually molt before winter. With the strain of birds that we have at this Station a White Leghorn pullet that does not begin to lay before she is eight months old can generally be discarded as a poor producer. By means of the ear lobes it is a comparatively easy matter to go through a flock of utility White
Leghorn pullets eight months after they are hatched and pick out those that have not laid. It must be borne in mind, however, that the ear lobe test simply indicates whether the bird is laying or not and does not necessarily indicate that a bird will lay heavily throughout the year. Some experiments have been carried on at this Station to test the reliability of this method of telling whether a bird is laying in comparison with some of the other methods. We have found it to be very much more reliable than the pelvic arch or comb test. In fact, we find it practically absolutely reliable as showing whether a bird has been laying heavily recently or not.

The practical application of this work is (1) start in the fall of the fourth year with birds having bright yellow shanks, (2) when the birds are about seven to eight months old, if they were hatched in April, May or early in June, go through the flock and cull out all of those birds that have yellow color in the ear lobe. In other words, cull out those that had not begun to lay, (3) beginning about July 1st, go through the flock once or twice a month and cull out those hens that have yellow shanks, have begun to molt and have dried up combs. Keep on culling till the flock is reduced to the number it is desired to winter. By culling early the poorest producers will be taken out first and their feed bill will be saved. The later the birds are culled the higher will be their average egg production. This can be done with yearling as well as with pullets with the same result.

PIGEONS AND SQUABS

BY THOMAS WRIGHT

Yama Farms, Napanoch, N. Y.

Fountain Stock at Yama Farms

The adage "'tis remuneration that makes labor sweet" can not be better verified than in results obtained by breeding squabs, when a perfect understanding is reached between the breeder and the requirements for his success.

The means of education to this end are limited insomuch as our State Colleges and our National Board of Agri-
culture have seemed to disregard the valuable service that the pigeon is capable of rendering to the world of commerce. In view of this fact the enterprise and philanthropic spirit of the proprietor of the Yama Farms has offered to the aspirant of squab fame one of the greatest evils in any inexperienced breeder. Securing the fountain stock is often the text of either success or failure. We must not be lured into fascination by inducements offered for our money except by buying vigorous healthy stock a little booklet of purely helpful suggestions, no advertising medium, but a companionable little informant, which may be had for the asking.

The business of breeding squab, though a very companionable adjunct to breeding poultry, can not be compared to it, because of the fact that pigeons are monogamous while poultry are polygamous. Breeding fowls seems mechanical; owing to a certain amount of monotony in the daily routine. Breeding pigeons possesses a suspicion of sentiment because the relationship existing between a pair of established breeding pigeons is of a nature well worthy of comparison to the human family.

But while the industry is full of sentiment it is also full of profit in purse, as well as mind food. The principal obstacles which confront the amateur are necessarily the result of ignorance and lack of experience. Too close relationship in breeding is at the start and, right here, I would advise any one to buy where the stock has been bred and where all the virtues and values are well known and were originated by the breeder and seller. Too much care in this direction can not be exercised by the contemplating beginner. Regard your attitude in the light of any commercial relationship to value received and do not run away with the effervescence of illuminated ink displays. Remember the characteristics, good or bad, are, by the process of breeding, transmitted to succeeding families and generations and are often perpetuated to our sorrow.

Beautiful and diversified as our domestic pigeons are, left to themselves, with no power of discrimination in their relationship one to the other, they soon revert to the original source “The Blue Rock,” with its black bars across the wing; the slatey color; the iridescent neck and the
black tip across the end of the tail and, in the process of breeding, no matter how careful we may be or how far removed by an infusion of other blood, symptoms of their wild variety will appear intermittently in a race. I am speaking now in connection with varieties most commonly used for breeding marketable squab, and not on the fancy or ornamentable varieties, as in the latter we find nothing useful in our purpose.

The breast of the squab being the most valuable part of the body as a receptacle for meat, we must have in the mind's eye, a sharp lookout as to breeding birds together, which are capable of improving this object. We shall not ignore the fact that there is a possibility of beauty of outline, type, symmetry and color, even while mating for commercial needs; but this should be the work of the experienced and not be attempted by the amateur for so often the fascination for the eye sacrifices the properties so essential for the normal stomach and appetite.

The Homer is advocated quite extensively as an ideal squab bird and still larger squab and if subjected to selection and careful breeding, after such has been judiciously exercised, is one of our most valuable breeders; involving as it does, all of the natural qualifications.

I was, one day, discussing the merits of various crosses, when my companion exclaimed "I have an idea the most valuable bird for squab purposes might be bred from the Runt and Carneaux." I fully agreed with his opinion and upon his invitation made this cross. By using male Carneaux upon female Runts this cross was made. One of the results of this cross may be seen by the illustration...
of one of these crosses in my hand. In front of the pen this process of crossing is in operation. To judiciously cross any two varieties, with proper proportions, should improve our purpose. To allow two varieties access to each other promiscuously produces a mongrel. The pigeons' responsive nature to improve principals of breeding is remarkably pronounced and very gratifying when compared with many of the lower orders of creatures we may experiment upon and as vigor is, I consider, the most essential quality in the breeding of pigeons, by judicious crossing we intensify this quality in every application.

The interesting feature of this cross of Runt and Carneaux is predeter-

EVERYTHING IS KEPT SPOTLESSLY CLEAN
mining the color of the offspring. The idea being to produce a red bird with largely the marketable quality of the Carneaux and the size of the Runt. Departures from this appear occasionally, but a very large proportion

reason is this, that the pigeon successfully plays the part of incubator, brooder, feeder and saves all expense of these requirements which must be supplied in extensive poultry breeding. Hence, the necessary outlay of cash, to establish a business which returns a good profit, when compared with poultry, is far less, while the cash returns come to the invester much earlier than from the poultry breeding.

It is not my purpose to, in any way, cast reflections or disrespect upon the breeding of poultry, but there is a desire to combine the two industries and, at times, the amateur asks himself this question "which of the two shall I engage in?" If the inquirer is a natural lover of the feathered race his interests and perseverance will, I think, more readily respond to in breeding squabs than breeding poultry, if an equal amount of knowledge is bestowed on the former as upon the latter, while the pleasure of the details of breeding the squab, to the student of nature, is a never ending larder of delicacies to the active mind.

This illustration, House No. 1 Yama Farms Squabbery, contains breeding apartments for about 450 pairs, also an office, a killing room with cement floor—designed especially with an eye to perfect sanitation—a perfectly equipped grain room—with bins all around it—and upstairs there is a sleeping room for an attendant, also a large lecture room and reading room and all are heated with steam heat.

A system of ventilation is here shown in middle of the pen, also serving as a roosting place at night. The droppings fall to the floor and all odors escapes through the perforated tube.

The roof of these houses projects about 18" over the sides of the building. The front wall on the outside, you will observe is provided with perches where birds can indulge their vacant period with sunshine or, if a shower overtakes them and they desire to get out of it, they can roost on

MR. WRIGHT HOLDING RUNT-CARNÉAUX CROSSES

respond to the methods used, and are about the most satisfactory product that I have yet seen.

I should like very much to go into detail upon specifications pertaining to the above subject, but space and time will not admit. There are two special reasons why squab breeding should receive active support. One is, as our game birds are so protected by game laws, cold storage long ago became exhausted, and the squab is called upon to fill the vacancy caused by this and no output of good squabs will ever glut the market. Another
these perches, which afford many hours of rest and pleasurable display without the possibility of being annoyed by disagreeable companions. The entire house, interior and exterior, is the only one I have seen, of the same degree of perfection. We have other houses strongly resembling it in detail.

I most sincerely regret that I can not go more extensively into detail here, upon the various topics which are essential to successful squab breeding. I shall, however, be very glad to aid in any way I can, the amateur, who may read this article, if he will consult me. Squab breeding is, without exception, the most interesting branch of agricultural life. The many unoccupied buildings upon nearly every farm, which a small outlay of cash would make suitable can be used for breeding squabs for market and a good profit realized.

MY EXPERIENCE WITH POULTRY

BY CAROLYN J. BOTT, W.P., ’11

(Note. Here is an excellent example of “Back-to-the-Landers” making good in the Poultry Business,)

“Turkey, duck, rooster, hen
We’re the best that’s ever been
We’re right here, just fifty-seven
Cornell Poultry, nineteen-eleven.”

SOME few years ago we came into possession of a country place on the outskirts of a fairly large city. With this home we became owners also of a flock of white Wyandotte hens. These were taken care of for a year or more by our hired man with the result that we received a few eggs in the spring, but none in the summer, fall or winter.

I resented this attitude on the part of the hens and decided to look into the matter. We sent to the Maine Experiment Station for their bulletin to see if we could make the hens behave differently. We knew absolutely nothing about hens, but followed their instructions to the letter, and just three weeks after that we found our first eggs, not withstanding that this was in December. This convinced us that hens did lay eggs, a fact previous to that time it was difficult for us to believe. They laid steadily and our interest increased.

It so happened that we decided to be “Back to the Landers.” We had a large dairy farm of 400 acres that was being run on shares, situated in Shelburne, Vermont, on the beautiful shores of Lake Champlain.

We attempted for three years after our arrival to run the dairy part of the farm ourselves, but with the incompetent help and the low price of milk we found it anything but a remunerative proposition; it was also a source of great annoyance. So in desperation we have again rented it. Fortunately it is so situated that the dairy part can be cut off and not interfere with our poultry business or our residence and grounds. Our experience has been that with the price of labor, and the poor work given in return for high wages, nothing can be made in running a dairy situated as far from a good market as we are, and we feel that the only excuse for our dairy farm is to furnish skimmed milk for our poultry.

In the winter of 1910, I went to Cornell and took the Poultry Course. On the first day of the class, I remember being asked what breed I wished to have for pen practice, and I loyally stuck to Wyandottes; but before I had finished those six weeks of arduous labor and had seen other students carrying in dozens of eggs, while I was getting only a few, my
loyalty received a bump, and before the course was over I was a strong convert to Leghorns for the commercial plant.

We started in April with two 460 egg incubators and three Cornell gasoline brooders. We did not hatch a large percentage of our eggs that first year, although our brooding record was good. In the fall we built a three-pen, long house, each pen 20 x 20 feet with shed roof, cement floors, and muslin curtains after the approved Cornell plan. Board partitions three feet from the floor with muslin above, and self feeding hoppers between each pen. We put into our new house in the fall of 1911 only 270 pullets.

Lake Champlain is a wonderful country for beauty, but hardly an ideal place to start the poultry business with the thermometer often falling to 30 degrees below zero. Two hundred and seventy pullets meant only about ninety birds in a pen, and one night they froze their combs. Since then we have put muslin curtains on wires in front of the roosts, and when the thermometer registers zero at 10:30 at night, the man of the house gets his lantern, goes out and draws the curtains making it cozy for the ladies, who have done such good work for us. Of course with the zero weather we got no eggs for some time, but at the end of the year we cleared $1.68 a bird.

When I give our profits, I wish to make the point that a regular set of books is kept and everything charged against the birds, feed, cartons, cases, interest on the investment, and all expenses of every kind. We do not make any charge for labor against our profits, as we consider this a one man business, and the profits are supposed to include the care and labor of the owners. In fact, the labor consumes a great deal less than one man's time, except at the brooding season. If labor is to be charged against the profits, they, of course, would be correspondingly reduced.

The following fall we built an addition of two pens on to our original three pen house, making a house of five pens, each pen 20 x 20, and feed room. That year we started in the fall with 515 pullets and 200 hens and made a net profit of $2.18 a bird during the year.

The following fall we added two more pens to our long house making seven pens 20 x 20 feet each, and also enlarged our feed room making that room 18 x 20 feet, enabling us to buy our feed in large quantities at a considerable saving. We put into this house 600 pullets, and 340 yearlings and 200 year-olds, the latter for breeders. We were fortunate enough to sell a considerable number of eggs for hatching, but our principal source of income was from market eggs. We cleared $3.05 net per bird that year, and had an average production of 170 eggs from our pullets kept in one large flock.

Our brooding records for the past three years have been 97 1/2%, 95% and 96% respectively. That is, we raised to eight weeks old (when they were put on range) the above percentage of chicks put into the brooder. We never put into a brooder a chick that shows the slightest weakness or deformity, and the moment one develops droopy wings or low vitality, that chick is killed, and charged up against the brooding record of that house. This is done systematically, and we know our records are correct and not padded.

I personally take entire charge of the incubating and brooding. No one feeds my chicks but myself, and they are fed as regularly as an infant. After the chicks have reached eight weeks of age, they go in range where they lead a free, untrammeled life with everything that a self-respecting chick needs to make it happy. I know my percentage in brooding would have been higher this year had I not been compelled through illness to leave my last batch of chicks when about three weeks old. These little fellows were left for our man to take

Continued on page 510.
FACTS ON SUCCESSFUL POULTRY KEEPING

BY EDWARD S. PARSONS, W.P., 1911-12

Manager of the Poultry Department of Broad Brook Farm, Bedford Hills, N. Y.

The poultry department of Broad Brook Farm, Bedford Hills, New York, of which I am in charge, consists of about 15 acres of land all of which is set out to an intensive apple orchard.

While the chicken department and apple orchard use the same land they are absolutely independent departments. Each keeps its own records and accounts of all business.

The soil is light and gravelly with a sandy sub-soil, affording excellent drainage and making it possible to keep a very large number of chickens per acre.

This combination of chickens, fruit and light soil is ideal. The chicken manure gives strength and rapid growth to the trees, and in most cases, brings them into bearing younger. The orchard in turn gives shade in summer and helps to break the wind in winter.

The poultry department on Broad Brook Farm is run to pay and not as a hobby or plaything. Success in poultry depends as much on sound business principles and ability, as on practical and scientific knowledge of poultry.

All revenue comes from the sale of sterile fancy white eggs, eggs for hatching, line bred cockerels, cocks and hens as breeders, fancy broilers, fancy light roosters, custom hatching and day old chicks.

The stock, Single Comb White Leghorns, I have line bred for constitutional vigor, late molting, size and egg production using only large cockerels of known parentage. Now that I have given a rough outline of the plant I will begin with the starting of the incubator and give the working system from the time the chicks are born until they are sold.

All hatching eggs are dipped in a solution of bichloride of mercury and let dry before going into incubator. The first eggs go in about February 7, the last about the middle of April. I do not want chicks hatched after May 10th. The floor of the incubator cellar is always kept wet, and on the 18th day all eggs are sprinkled with warm water. As soon as the chicks are dry in the incubator (that is 24
hours before chicks are usually removed) they are taken out and each chick given a pen dropper full of commercial starter, buttermilk, or clean sour skimmed milk, down its throat filling the crop. (I prefer commercial starter.)

I have proved by the last two years’ results, that my method of filling the chick’s crop as soon as dry with starter will overcome Bacillary White Diarrhea and make it possible to raise strong vigorous chicks from once infected stock.

After the chickens get their dose of starter they are put in the brooders, fed and cared for as follows:

As soon as the sex can be told (4 to 5 weeks) the chicks are gone over, all toe-marked cockerels left with the pullets, the remaining cockerels put in another pen to be fattened and rushed to market. Last year some cockerels weighed 1 ½ lbs. at 7 weeks old.

No food is given until chicks are 36 hours old. After chicks learn to drink, sour skimmed milk is always before them in open pans. Fresh water with permanganate of potassium in it, is always before chicks, also oyster shell and grit.

Beginning with the first feeding, chicks get all the green food they will eat; I use mangel beets stuck on nails and find picking at the beets keeps the chicks busy and out of mischief.

First feed to fifth day. Mixture 1—fed dry, three times a day, 6 A. M., 11:30 A. M., 5 P. M. Mixture 2—mixed half and half; fed dry twice a day, 9 A. M., 3 P. M. All feed given in shallow pans, left before chicks only ten minutes at each feeding. A little of mixture 1 is scattered in litter to make chicks learn to scratch. On second day mix mixture 3 with 1 for 6 A. M., 11:30 A. M., 5 P. M. feeding.

Fifth day to second week. Mixture 1-3, mixed, fed in litter three times a day, 6 A. M., 11:30 A. M., 5 P. M., all they will eat up clean. After few days drop out mixture 1. Mixture 2, fed dry in low troughs with wire screens, twice a day. Half hour in morning 9:30 to 10 A. M. One hour in afternoon, 3 to 4 P. M.

Second to fourth week. Mixture 3, the same. Mixture 2, before chicks one hour in morning, all afternoon.

Fourth to sixth week. Mixture 3 the same. Mixture 2 always before chicks.

Sixth week to maturity. Chicks on range. When chicks are first taken out mixtures 3-5 mixed are fed in colony houses or temporary yard. Mixture 4 in hopper in house. As soon as chicks are given free range, mixture 4-5 is fed in large outside hoppers. After chicks are 3 months old, mixture 6 is used. All cockerels to be fattened are kept in small flocks in pens. The fattening mash is always before chicks in hoppers, and fed wet with some skimmed milk at 1 P. M. At night they are given all the corn they will eat up clean.

CHICK RATION.

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<tr>
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<tr>
<td>15 Fine sifted meat scrap</td>
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<tr>
<td>15 Fine oyster shell</td>
<td>100 Corn meal</td>
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<tr>
<td>15 “ grit</td>
<td>20 Alfalfa meal</td>
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<tr>
<td>145</td>
<td>100 Fine sifted meat</td>
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<td></td>
<td>20 Gluten feed</td>
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<td></td>
<td>40 Meat scrap</td>
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<td>50 Oats</td>
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Fattening Mash

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<tr>
<td>150 Wheat middlings</td>
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<tr>
<td>50 Fine meat scrap</td>
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<td>500</td>
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All laying and breeding stock are
Top.—Cornell colony house, surrounded by orchard, which is planted with rye in which the chicks can run. Middle.—Pullets and marked cockerels. This picture was taken in June. Note size of pullets. Bottom.—Long house, 350×16, holding harrowed twice a year.
The poultry plant is located in the orchard here furnishing ideal conditions for the hens.

Housed in two houses, one 20 x 80, capacity 500-550, the other 16 x 350 with feed house in center, killing and picking room underneath, extra store-room and living room above. At west end, manure house with drive underneath and trap door. An overhead trolley runs through east pen, around feed room with extra switch through west pen to manure house, a stove and non-freezing hydrant are at one side of feed room. By using a water barrel, feed and manure cars, labor is reduced to the minimum. 900 to 1075 chickens are kept in each side running together with excellent results. Houses of this type have many advantages over small houses, they are cheaper to build per hen capacity, are much warmer in winter, cooler in summer when equipped with large back ventilators, everything being compact and under one roof, there is no lost time of labor.

The last of August, pullets are brought in from the range and put in one side of long house, and small house. Marked cockerels to be kept as breeders are put in other side of long house with hens.

All laying stock are given ration 1.

This house is 20 x 80 with room for 500-550 hens. Note how well lighted the house is.
For the breeding stock I use a wide ration because breeders cannot be forced by heavy feeding of protein and other stimulating foods and be expected to lay eggs that hatch and produce strong chicks. Forced feeding does not affect fertility, but it most assuredly does affect the hatching power of an egg, the strength of the germ and the chick.

From November 1st to May 1st, all breeders get ration 2.

With the exception of the mash, the breeders and laying stock are treated alike. Mash is always before the birds in hoppers which are filled every Monday morning. Each account is kept of pounds consumed by each pen or house. By knowing the amount of mash consumed, it is easy to feed the grain at the proportion of 2 pounds grain (or little less) to 1 pound mash. Dropping boards are cleaned every day except Sunday. Early every morning all chickens get fresh water with permanganate of potassium in it, and again at 1 p.m., right after watering, all chickens get a light grain feed and in winter again at 11:30. This is to keep them busy and exercising.

At 1 p.m. green food is given. In winter mangel beets, using 8 pounds to 100 chickens, spring, until a killing frost, green cut alfalfa, oats and peas, are fed on the litter, all they will eat. At 4 p.m. in winter, 5 p.m. in summer, the heavy grain feed is given. Clear dry days all chickens are let out just before noon. I have found the egg production is higher when hens are not out all day. After December 1st they are not let out until the ground has dried up in spring. All houses are disinfected with cresol every other week. Nests and roosts are scraped and painted with kerosene about once a month. Tobacco stems are used in nests.

Continued on page 512.

FARMERS' WEEK IMPRESSIONS AND COMMENTS

BY BRISTOW ADAMS

After having attended Farmers’ Week gatherings in many parts of the country as widely separated as Louisiana, Virginia, and Wisconsin, one naturally has some preconceived notions as to Farmers’ Week in New York. These notions were quite upset; experiences in other states gave no anticipatory idea of the numbers, interest, and perfection of organization to be found at Cornell.

Before the Week began it seemed that the plans were nebulous; there was a surprising lack of “fuss and feathers,” as if those who had the matter in charge expected the events just to happen. On Monday, however, everything slipped into well-oiled grooves, and the exercises were under way with all the smoothness of a ship launching.

It is hard to understand how Ithaca took care of one-fourth more than its normal population; yet a somewhat careful inquiry failed to reveal any source of dissatisfaction. Throughout the week the cheery good nature of all of those who were in attendance, either as spectators or as performers, was worthy of comment; and even at the end of the week, when one might suppose that the strain would begin to tell in fatigue and in frayed nerves, the same pleasant feeling prevailed.
An ideal of helpfulness pervaded the whole place.

The big feature was the attendance, and the final figures showed a total of 3,877 actually registered as against 2,551 the year before and 2,409 in 1913. This marked increase was more noteworthy in comparison with the fact that in other Agricultural Colleges there was a decrease in Farmers' Week attendance, such decrease having been reported from Pennsylvania and other nearby states. Missouri and Ohio showed increases, and Missouri with 2,810 registration claimed the largest attendance ever recorded at any meeting of the sort in this country. Missouri held the record for less than a month, when New York came along and topped Missouri's crowd by 1,067.

A good many have sought to analyze the cause of this increase. Early estimates predicted a falling off, based upon unfavorable farming conditions during the past season, upon business depression, and upon reactions from the war. Several at the College said that they would not have been surprised if the registration had shown a falling off of approximately one-third. When it showed an increase of that proportion those who were interested in statistics immediately set out to seek the cause. Various explanations of the increase have been advanced. First, there was the prestige and the popularity of Dean Galloway, who had recently come to the college after having achieved prominence in national agricultural circles as Assistant Secretary of the U. S. Department of Agriculture. Professor Tuck, head of the extension department, which had the Week in charge, said he thought there was an additional reason for the increase in the cooperation of the rural and agricultural press which printed a great deal of information about Farmers' Week and its activities. The first news story sent out by the College was printed in no less than 193 papers, with a total actual circulation of 910,800. In addition to that item, the College sent out thirteen other news stories, each one bearing on Farmers' Week, but treating of some specific feature, such as the vegetable growers' association, potato show, home garden day, drainage convention, good seed conference, a chance to learn about poultry, a conference of farm bureau workers, country church conference, demonstrations in dairy work, exhibit of farm animals, meeting of floral clubs, home economic conference, and a gathering of fruit growers. Each one of these through the helpful cooperation of the press undoubtedly had its effect in adding to the attendance.

Dr. Andrew D. White, first president of Cornell University, was another who was impressed by the attendance, and sent the following message, which was read to those who gathered to hear the Eastman Stage orations:

"I have looked over the program of subjects with particular interest and appreciate the value of the exercises. It pleases me to know that the state is doing all this splendid work for its agriculture and its farmers. The attendance is a source of great satisfaction to me, particularly in the fact that people have come so far and that numbers of young people came today. As I look out of my windows I survey the College of Agriculture, and I am filled with satisfaction that this great work is under way."

Of the week itself there is little that should be singled out as pre-eminent. On every side were comments of high praise for those who had arranged the program and who took part in carrying it out. There was no friction and no accident to mar a perfect week.

The student activities are worth special mention, not only because they added to the enjoyment of those who attended, but also because they gave object lessons to the visitors of what the College might be supposed to stand for. Without doubt the best feature contributed by the students was the Eastman prize competition. It is no disparagement to the College staff, or to the visiting lecturers, to
say that the appeals for the ideal country home and for better recreation facilities, made by Mr. Hatch and Mr. Heinsohn probably had a more potent effect than most of the other talks given during the week. To mention only the winners, too, does a certain injustice to the others who had part in an even contest.

Another form of the students' activity, inconspicuous but of great value, was shown in their unselfish service as guides, guards, registration clerks, and announcement, arrangements, attendance, checking, rooming, ventilation and information bureau workers. Those who had occasion to note it, will not soon forget, for example, the devotion of one man who had charge of the trying task of the cloak room, and was on hand from early morning until the last entertainment was over at night.

One comment on the motion pictures shown in the Auditorium expressed very well the point of view of most of those who attended. These motion pictures were a new feature, and were introduced merely as a counterattraction during lunch hour, so that there would not be too much congestion at one time at the eating places. A few of the films shown were of the melodramatic type, and one earnest-souled farm woman presented this in the remark that she "had come to be instructed and wanted all the instruction she could get." The next day the films showed the operation of milking machines, and also the work of the Federal Forest Service in administering the National Forests, especially as to their protection from fire. The films of this type seemed to give perfect satisfaction. As a result, it is planned that such films used another year will aim to combine education with entertainment. Next year, perhaps, it will be possible to show some of the "movies," taken at the College this year.

In spite of the larger attendance the crowds were handled with great ease. This was due no doubt to the availability of two new buildings, the Forestry Building and the new Soils Building, and to the efficient student help.

Having demonstrated that the College can readily handle approximately 4,000 people during Farmers' Week, the Extension Department is confidently looking forward to taking care of more than 5,000 next year, and the whole College is hoping that the farmers of the state will take advantage of the opportunity to see their institution and to get acquainted with it at first hand.

"DAFFODILS
THAT COME BEFORE THE SWALLOW
AND TAKE WINDS OF MARCH WITH
BEAUTY."

—Shakspeare
Recently, there was received at the College, a letter telling of a graduate who had failed to make good as a farm manager, mainly because of his lack of practical farm experience. Such cases as this which are not altogether uncommon, are demonstrating the importance of the problem of farm experience which this college and which all agricultural colleges are now facing.

The time is coming, and is coming fast when the College will demand more farm experience before graduation. This is bound to happen. The reputation of the College is already suffering too much because so many of its graduates lack this experience. But how shall the students who have not had this practice, secure it?

Probably the best thing for them to do is to stay out a year and work on a well managed farm. It is far better to do this now than to wait until after graduation. They will find it much easier to secure a satisfactory position. If this is impossible the next best thing to do is to work on a farm during the summer. Now is the time to begin to look for a place on a farm.

Perhaps the question is raised as to how such positions can be obtained. If you are not personally acquainted with any farmers for whom you could work, seek the aid of the various departments in the College. If you want a position on a fruit farm, probably the Pomology Department will help you; on a poultry farm, the Poultry Department will assist. Put in an application in the Farm Practice office.

A few years ago a student, desiring a position for the summer, selected at random, from a list of the members of the New York State Fruit Growers’ Association, twelve names in the locality in which he desired work. He wrote to those men and in this way secured a very desirable, enjoyable and profitable position.

Former students, here is an opportunity for you to help the College. If
during the coming summer, you can employ any students on your farm, by all means do so. Help some fellow Cornellian to be better fitted to start his life’s work.

The pendulum is about to swing the other way. During the last few years there has been a gradual falling off in the popularity of our Assemblies, due to the great diversity of interests of the student body and to the enormous increase in numbers of the students. The old Ag. spirit of sociability and friendliness, which was so prevalent at our former Assemblies—a feeling that no one could afford to miss these meetings—threatened to become atrophied. But the time is at hand for this spirit to reassert itself. The pendulum had swung too far the other way and is now swinging back.

The Assembly of March 11th will mark the start of a new era. Recognizing a growing sentiment against the long lectures at these gatherings, the Assembly Committee is arranging for an entirely different program, one more especially designed to promote the social phase, but at the same time having an educational background. There will be three Assemblies this term, each one distinguished by some new feature. The program for Thursday, March 11th, includes a mock Congressional hearing, good music and a social “get-together” afterwards. The meeting will be held in Bailey Hall.

Faculty and Students,—now is our chance! Let us all put our shoulders to the wheel and push, and make the Assemblies something to be anticipated and looked forward to, long in advance. These gatherings furnish the best opportunity for faculty and students to meet each other on a common ground and get better acquainted. They are too valuable an institution to be lost. Let us start things with a rush by having everybody come out to the next Assembly.

Six of the leading Agricultural College Magazines sent Association of Ag. delegates to Chicago for a convention on February 12th and 13th. The size of publication, the number of Magazines Founded issues and the advertising rates were standardized.

The Cornell Countryman leads the other magazines in the Association in size of circulation.

A New Home for the Countryman

At last our dreams are realized! On February 23rd, the Cornell Countryman took possession of the Rural School House, formerly occupied by the Department of Rural Education. This change to larger, lighter and more convenient quarters will greatly aid the staff in their work. To have a building of their own has been the hope of many former boards and now that this is a reality, we issue a hearty invitation to all our friends to visit us and allow us to “show them around.” The Countryman staff feels very grateful to the College for this building and takes this opportunity to express their appreciation.

The Countryman wishes to announce the following elections to the staff: Miss R. H. Smith, ’16, to succeed Miss H. M. Bergholtz, ’15, as Women’s Editor, and I. B. Dewson, ’18 as a member of the Business Board. The staff desires to thank W. L. Dean, ’18 for the excellent work he did in competition.
The Cornell University Poultry Association was organized in 1903. It is believed by the writer that it is the third oldest student organization of this College; the Agricultural Association and the Lazy Club having been formed prior to it. The Association was formed for the purpose, first, of stimulating and encouraging students' initiative in organization; second, of conducting an annual poultry show and educational exhibit; third, of holding meetings at regular intervals for the social and educational advantages that were to be gained.

The Association has been financed primarily by the sale of poultry books and magazines, and the collection of a small annual fee for membership. The total sale of books and magazines having amounted to over $500 in a single year, as the result of the voluntary effort of those students interested in poultry. It is due to this that the Poultry Association now has over $200 on which it is realizing 5% interest.

The association has from time to time offered special prizes to students for excellence in judging and scholarship, etc.

A total of six poultry shows have been conducted. In several instances the funds raised by the students were sufficient to fully finance the holding of the annual poultry show which included such expenses as catalogues, ribbons and general printing expenses. The first poultry show was held in 1904 in the old judging pavilion. An educational exhibit was staged there, and the total registered attendance was 424. The second show was held in the Farm Mechanics Laboratory in the Agronomy Building, which is now the Library. The registered attendance was 511. The third and fourth shows were held in the Animal Husbandry judging pavilion. The next poultry show was held in the basement laboratory below the old Horticultural Library. The following year one of the green houses was used, and the next year, a show was staged in one of the head houses of the green house. The shows then had to be discontinued because of lack of space, and only a few birds have been shown since, merely as an educational exhibit. In 1914 the registered attendance of the educational exhibit was 708, many more not having signed their names.

Findlay

The first prize for a Drainage report on drainage given before the Sixth Annual Convention of the New York State Drainage Association was won by A. B. Beaumont, Grad. His report concerned the “Principles of Underdrainage in Relation to Soil Improvement.” The first prize consisted of $25 in gold and a banner. The second prize of $10 and a banner was received by W. C. Lyman, a short course student who delivered a report on “Reasons for Tile Drainage.” R. E. Barringer, ’16, and J. R. DuFloo, ’17, received third and fourth places respectively. All of the reports were well presented and the competition for first place was very keen.
SPEAKERS ON THE EIGHTH ANNUAL EASTMAN STAGE

E. C. HEINSOHN, '15(2ND);   T. B. CHARLES, '15;   E. D. ROGERS, '16;
B. W. KINNE, '16;   MISS R. H. SMITH, '16;   D. S. HATCH, '15 (WINNER)

The Eighth Annual Eastman Debate Stage, held February 12, was won by D. S. Hatch, '15, of Greenwich, N. Y., who delivered an address on "The Farm Home". E. C. Heinsohn of Mt. Vernon, N. Y., won second place on his presentation of the subject of "A Plea of Recreation in Our Rural Communities". In the absence of Dr. Andrew D. White, who was to preside at the stage, Director B. T. Galloway introduced the speakers. This stage is open only to undergraduates in the College of Agriculture who through competition are chosen to compete for a first prize of $75 and a second one of $25. These sums of money are available on account of the generosity of Mr. A. R. Eastman, a farmer and business man of Waterville, N. Y.

This stage was given before a large audience of persons in Bailey Hall most of whom were Farmers' Week guests. Hatch spoke in a plea for the improvement of the farm home in equal ratio to the improvement which has been brought about through science in the business end of a farming enterprise. Heinsohn devoted his speech to the increasing necessity for play grounds and recreation pavilions even in the most thinly populated sections of the country. In addition to the prize winners, T. B. Charles, '15, spoke on "Is College Worth While"; Miss R. H. Smith, '16, on "The Country Girl"; B. W. Kinne, '16, on "The Lever Extension Act"; and E. D. Rogers, '16, on "Prohibition and the Farmer."

Changes in Roberts Hall. of the main building was interrupted by the influx of Farmers' Week visitors, but it has been resumed. The library has already been installed in its new quarters in the basement of the Agronomy Building and the Secretary's offices are now located where
the library formerly was. A part of the campus North of Roberts' Hall has been torn up for the purpose of connecting up the pipes from the new central heating system.

"The Kermis" given "The Kermis" by the Agricultural students deserves to have a permanent place among the events of Farmers' Week. The entertainment given in Bailey Hall, Wednesday evening, Feb. 10, was the second of its kind, since the production last year met with such success as to insure a repetition of the event. A number of separate acts or stunts by different undergraduate associations made up the whole performance.

When the Agricultural Glee Club sang the opening number there were few vacant seats in the large auditorium. After the Glee Club had delighted the audience with its singing, the Sophomore Class presented a short play in one act entitled "A Regular Fix." The humorous situations afforded by the rather simple plot of this act were very amusing. Students in the Landscape Art Department took part in a Scenario, in which students and trimmers did stunts, during the interval between the Sophomore and Junior productions. A dance by two of the members of a theater party was one of the features of the Junior act which represented a cabaret. The Forestry Club act was entitled "A Day's Work." A few of the duties which are parts of the ordinary day's work of a Forest Supervisor were humorously shown in this production. The Lazy Club gave a comic negro minstrel show. The Seniors presented "Mutt and Jeff at the Circus." These comic characters were shown at Farmers' Week, at the circus, and at home.

Photographic prints of the Kermis cast may be obtained at the H. C. Cable Art Store, 405 College Ave., Ithaca, N. Y. at 25 cents each.

The Weather Map. The large weather map which has been placed near the main entrance to Roberts Hall is surely an object of interest to students. Before the college secured it, the map was used in Trenton. Each morning the weather indications on the map are changed according to messages received by the local station from stations scattered over the whole country. The map graphically gives information about high and low pressure areas, temperature, direction of winds, and state of the weather in different parts of the country.
FORMER STUDENT NOTES

Former Students—Your classmates are anxious to know what you are doing. Write today, giving us some information about your work. Also if you can employ a student on your farm during next summer, please let us know, as there are many seeking such positions.

Among the various departmental clubs of the College of Agriculture, the Poultry Association is second oldest having been organized in 1908. Its object is primarily to bring together those students who are interested or specializing in Poultry Husbandry.

- J. G. Halpin, '05, Professor of Poultry Husbandry, University of Wisconsin.
- L. B. Cable, President. Special. Proprietor and Manager of a large stock farm.

CORNELL IS WELL REPRESENTED IN THE POULTRY DEPARTMENTS OF THE VARIOUS AGRICULTURAL COLLEGES OF THE U. S.

Perhaps the activities of the Association can best be shown by listing some of the most active members and showing what they are doing at the present time.

1904. C. A. Rogers, '04, President. Formerly Assistant Professor of Poultry Husbandry at Cornell. Now proprietor of poultry farm at Bergen, N. Y.
1905. J. H. Moody, Superintendent of the Harriman Farms, Harriman, N. Y.
1905. L. G. Thayer, Proprietor and Manager of a Poultry and Truck Farm near N. Y. City.

1907. R. C. Lawry, '10, President. Proprietor of Yesterlaid Poultry Farm Pacific, Mo.


1907. P. W. Kimball, Supt. of Yesterlaid Poultry Farm, Pacific, Mo.

1908. L. F. Boyle, '10, President. Manager of Truck Farm in Utah.

1908. W. O. Strong, King's Mill Farm, Grove, Va.

1909. F. S. Jacoby, '10, President. Professor of Poultry Husbandry, Ohio State University, Columbus, Ohio.


1909. H. B. Rogers, '13, County Agent, Chautauqua, Co.

1910. E. W. Benjamin, '11, PhD., President. Assistant Professor of Poultry Husbandry, N. Y. State College of Agr., Cornell.

1910. J. E. Dougherty, '11, President of Poultry Husbandry, Davis Agricultural School, Davis, Cal.

R. V. Mitchell, Special. Assistant Professor of Poultry Husbandry, N. H. Agricultural College.


1911. P. R. Guildin, '13. Proprietor of fruit farm, N. J.

1911. Pound, '13. Proprietor of poultry and fruit farm, N. J.


1913. T. J. Conway, '14, Assistant in Poultry Husbandry Texas Experiment Station.

1913. H. C. Knandel, '14, Instructor and County Adviser, Berkley, Mass.


1914. T. B. Charles, '15, President. Assistant in Poultry Department at Cornell.

CORNELL AG. MEN IN THE U. S. DEPARTMENT OF AGRICULTURE.

There are at present residing, or officially stationed in the city of Washington, about 65 graduates and former students of the College of Agriculture at Cornell. Of these there are at least 60 enrolled on the scientific staff of the United States Department of Agriculture. The Bureau of Plant Industry, the largest in the Department, claims 43 of the 56; the Bureau of Animal Industry employs 9; the Bureau of Entomology 5; and the Bureau of Soils, the Bureau of Chemistry, and the Office of Experiment Stations 1 each. One graduate is the chief of the Bureau of Mines of the Department of the Interior, one is in the Patent Office and one in the Bureau of Education of the same Department, one is in business in the city, and one is connected with the Chinese Legation at Washington.

'77, B.S. — Leland O. Howard. At the recent meeting of the American Association for the Advancement of Science, held in Philadelphia Dr. Howard, who is Chief of the U. S. Bureau of Entomology, was reelected permanent secretary of the Association for a period of five years. During the course of the meeting Dr. Howard and several other prominent scientists expressed their willingness that their brains should be used for scientific study after their death. This action on the part of such scholarly men is expected to result in a distinct contribution to the science of Neurology.

'81, B.A. — Joseph A. Holmes, Chief of the Bureau of Mines of the U. S. Department of the Interior, has been for some time at Fort Bayard, New Mexico, where he is slowly recovering from a protracted illness. During the past year Dr. Holmes has been President of the Cornell Club of Washington, a position to which he was re-
recently unanimously reelected. It will probably be six months more before he can return to Washington.

'98, B.S.A., '01, D.V.M.—A. R. Ward, has just been promoted to the responsible position of Chief of the Pathological Division of the Bureau of Animal Industry in the U. S. Department of Agriculture.

'02, B.A.—Miss Clara W. Hastings is part owner of a successful poultry farm at Homer, N. Y. After graduation she accepted a clerical position in the manufacturing plant belonging to her father. This position she held for the next nine years. At the end of that time she decided to start in the poultry business in a modest way, first coming back to Cornell to take the short course in Poultry Husbandry.

In March 1912, she purchased a second hand incubator. By running this twice she obtained several hundred chicks in May. At that time her father's plant was destroyed by fire, and it was decided to move to a farm. In the meantime she had bought another incubator and had placed orders for 1700 baby chicks, and several houses. In the fall of 1912, there were 600 pullets. This number was increased to 1000 by the next year and a mammoth incubator was installed. Last year another section was added to the incubator and the flock increased to 1200. It is planned to further increase the flock this year up to 2000. Only utility S. C. White Leghorns are kept. The egg production from September, 1913, to September, 1914, was 138,768 or an average of 138 per fowl.

'04-'05, W.P.—The former students of Chautauqua County have formed a club that takes in all the students of that county. The purpose of this club is educational as well as social. Their third banquet was held during the holiday season at Jamestown. About 85 attended, Professor Burrill delivering an address.

Professor A. R. Mann has been very helpful in the interests of this club. H. H. Harriman writes of this club very enthusiastically. He states in part, "I am glad to let the boys know that there is an organization, without a constitution or by-laws, that has stood more than two years because of the real merits of the club. Practical questions that come before the monthly meetings, sharpen the wits of the members, act as spurs to the future farm work, and keeps active the meetings. * * * Would that every county had a club." Harriman is at present traveling for a Cleveland firm. His home is in Chautauqua County, N. Y.

MRS. JAMES S. LANGFORD, SHUSHAN, N. Y., FORMERLY MISS WITHERELL, W. P., '12

'06, W.C.P.—We are in receipt of a very good account of what C. W. Joslin has been doing since he left Cornell. We take the liberty to print it word for word.

"In reply to your requests about my poultry work since leaving Cornell I will say that it has not been on a very extensive scale as I am in partnership with my father in general
farming on the old Joslin Homestead that has been in the family's possession for more than a hundred years.

"We have at present 100 white Leghorns and a trade with one of the best grocery stores in Troy, to which we have shipped eggs for eight years. The eggs are cleaned, graded and stamped with our name and address which we have tried to make mean quality.

"I also took some work in Horticulture while at Cornell and soon after getting home planted an orchard of apples, pears, plums and cherries for fillers. They have done well and gave a large crop this past season.

"We also planted part of the orchard to strawberries, raspberries, etc., and placed the Cornell type of colony houses near these. The shade of the raspberries and the trees makes a good place for the chickens and they help in developing the orchard and in producing some large crops of berries. Because of lack of efficient help we have had to cut down the berry plantations and reduce our acreage of potatoes, putting the most of our efforts on the farm to growing grain crops.

"We raise some colts, a small herd of cows, the milk being sold to parties from Boston and taken at the farm by teams that collect it in this section and deliver it to the stations for ten cents per hundred pounds.

"As to future plans I think the poultry part will be large enough, with the other farm operations, when we reach a thousand layers. For I think the poultryman will stay in the poultry business much longer if he runs his business more along the line of a poultry farm than a poultry plant, meaning by that to be able to raise part of his own feed, and giving part of his time and employee's time to dairying as general farm work, for the two work well together and on many of the eastern farms, the farm income can be doubled by a good sized flock of layers, the farm fertility increased and the amount of either stock crops raised need be no less, and probably be much safer than either poultry or crops alone."

We wish to thank Mr. Joslin through these columns for his lengthy letter. It is only in this way that we can let you know where your old friends are, or tell them about you. We have met with a great response to our requests for material and pictures for the Former Student Notes of the last few issues. From now on we are going to rely more on the former students themselves for support. The ball has started rolling and with a few lines or more from you every once in a while we can keep these columns full of notes and of pictures of the Former Students at work.

'09, B.S.A.—E. E. Eldridge, has left the Federal Bureau of Animal Industry to become Scientific Manager of the Phoenix Cheese Co., of New York, with headquarters at S. Edmeston, N. Y.

'09, B.S. A.—Miss Alice Evans, who was doing graduate work at the University of Chicago last fall, is now in Washington with the Bureau of Animal Industry, for whom she has commenced an investigation of the bacteriological and mycological characters of fancy cheeses.

'09, B.S. A.—Since leaving college E. G. McCloskey has been engaged in educational work at the Agricultural High School at Sparks, Md. This is secondary education of strongly agricultural and vocational nature in a very truly rural community. It is educational work very much like agricultural college work in its scope except, of course, that it is not as broad. It does, however, carry out all the phases of school, demonstration, experimental, and extension work, and now he even has a school paper, agricultural in every way, and the only one that is known of in the country coming from secondary school.

'10, M.S.A.—"The Relation of Genetics to the Improvement of Sugar Cane," is the title of a pamphlet recently published by H. B. Cowgill,
and printed in the *International Sugar Journal* for 1914. Cowgill is in charge of the Sugar Cane Breeding Experiments, at the Porto Rico Sugar Producer’s Experiment Station.

'14, B.S.—We have received a long letter from Chas. H. Ballou, who, after his graduation last June, went to Cuba to work as a pomologist for a contracting concern. These concerns make a business of caring for the property of a number of owners, doing all the work from clearing the land to marketing the fruit after the trees have reached maturity. One of these concerns now has over 500 acres planted to citrus trees, 10,000 of these trees were planted this fall. Soon he saw that it would be better to start out for himself as an Agricultural Expert, as there was no one to handle that side of the work.

Ballou therefore has the title of Agricultural Expert, with his office at La Gloria, Cuba. His work consists in making examinations of whole groves, or individual trees that need attention, and making any recommendations that may be necessary for...
the well being of the trees. If an absentee owner desires to know the status of his grove in detail, he makes out a tabulated summary for the owner, giving the condition and quality of each tree, and the amount of fruit to be expected. He then makes a chart, upon which the condition of each tree is indicated in its proper location. Where pruning or other work is needed, he directs the men himself.

La Gloria, where Ballou lives has a population of about 1000, most of whom are settlers from the United States. The place is very beautiful as well as very healthful and he says is an ideal location for either a summer vacation to avoid the heat, or a winter vacation to avoid the cold.

'07, B.S.A.—The first year after graduating H. H. Schutz farmed his own place; the next he left a young fellow in charge of it while he managed a 600 acre farm a few miles distant, remaining there until an offer presented itself to become one of the faculty of the New Mexico Agricultural College. After two years spent there, an offer came of the management and part ownership in a 4,000 acre irrigated farm at Los Lunas, N. Mexico, where he is located at present. Schutz has reached the point where he longs to get on about five acres of land which he can handle alone without the necessity of herding Mexicans, even through the interposition of a foreman.

'07, W.P.—W. H. C. Ensign after his departure from Cornell was manager of the poultry department of the Brook Hill Farm at Genesee Depot, Wis. He was in that position for two years, winning a record for winter egg production.

Since then he has made many changes in location for the purpose of the investigation of methods on large and well known plants. By doing this he has been able to observe the causes of success and failure in the poultry world. He has come up against many of the problems and has seen many theories proved and disproved. Ensign adds that he has never met the Cornell "Short Horn" who was not glad that he had gone to Cornell.

'08, B.S.A.—Miss Ethel Gowans, is now in Washington, D. C., engaged in school garden work in connection with the Bureau of Education of the Department of the Interior.

'07-'08, W.C.—We are in receipt of a little booklet from F. B. Roberts who attended here in '08. The booklet is a list of the speakers and their subjects for the use of the grangers and other agricultural associations of the State of Maine. He is one of the speakers, the subjects of his lectures being as follows. "How to Make Poultry a Source of Income on the Farm; How to Produce and Maintain a High Laying Strain; Vigor, Breeding, Feeding and Housing in their Relation to Successful Production of Poultry and Eggs." He and John A. Roberts, the Commissioner of Agriculture of the State of Maine are the owners of the Highland Farms at Norway Maine.

'07-'08, W.P.C.—On leaving Cornell, E. R. Stone took charge of the Poultry Plant at Pencoyd Farm, Bala, Montgomery County, Pa., which is noted for Single Combed White Leghorns and Guernsey Cattle. He was there for two and a half years and from there went to Clifton Springs, N. Y., where he had charge of the Plant at the Sanitarium Farms. He was there three years and then came to the Vandercamp Farms, Cleveland, N. Y., owned by F. C. Soule & Sons, of Syracuse. This farm is noted for Holstein Cattle as well as White Leghorns.

The farm is composed of 15 acres devoted entirely to the poultry. About 1600 S. C. W. Leghorns are now kept, and an incubator plant of 3000 eggs capacity.

Continued on page 513.
Martins's Dancing Academy

A GRACEFUL Dancer never has trouble filling his program. He is an "attraction" wherever he goes.

Dancing, correctly taught, develops gracefulness. We can teach you to become a graceful dancer because we know how to dance as well as how it should be done.

You learn to dance but once,
You learn it right at MARTIN'S

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Colonial Building
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How One Man Makes Money Growing Greenhouse Vegetables

He has a goodly sized tract of land next to a hotel resort colony. He grew lettuce, radishes and spinach in cold frames and sold them to the hotels. It paid. He built a small greenhouse. It paid splendidly. Then he built another and grew cucumbers. Then another for tomatoes. Then still another for flowers. He has five autos now and rides around and certainly has all the looks of "money in the bank." He is now considering tearing down some of his first houses that he built himself, and having us replace them with houses of ours, like his other ones.

He claims he would be many dollars in pocket if we had built for him at the start.

Think it over and if you want to get in a good paying business talk it over with us by mail or in person.

For over half a century we have been building greenhouses and we think we know something about how they should be built.
My Experience with Poultry
Continued from page 490.

care of, and he did the very best he could, but I immediately sacrificed twenty on my return. It was simply that they had been pushed aside by stronger birds, and hadn't received the nourishment necessary. I see to it that all receive enough food at every meal. I counted these against my record, which, of course, reduced my percentage.

If everything I learned in the course at Cornell was to leave my mind, one thing would remain and that is the great importance of "Constitutional Vigor."

Never will I forget that expression for therein lies one of the great essentials for success in the poultry business. Birds without "constitutional vigor" will not hatch strong chicks that will lay a large quantity of eggs. For the purpose of breeding we begin culling our early moulters and keep only our late moulters and fine vigorous birds. We do not try to have our breeders lay winter eggs, preferring that they save their strength to produce strong chicks in the Spring. We do not believe in pullet eggs for hatching and never even mate our pullets as we do not care to sell to some one else what we would not use ourselves.

We attribute what success we have had not to luck, but to hard work and looking after details. No night is too stormy nor too cold for us to go out and see if the chicks are comfortable or getting all the heat in their brooders that they should. I have known Mr. Bott, not ordinarily a patient man, to sit on a soap box in a brooder house watching a refractory burner until two o'clock in the morning and he wouldn't have left until daylight if it had been necessary for him to stay.

When we "Back to the Landers" first started in the poultry business we were the subject of many a joke and laugh on the part of our neighbors, but now they are very glad to ask us for advice, and to consult us whenever they have a hen with the "pip." We have started four people in our immediate neighborhood in the business, one of whom is a retired Railroad President who wants to return to the simple life, and who will "make good" with his poultry as he has in the past in other spheres.

A neighbor once said to us "No wonder the Botts make money with their chickens, they live with them." Wherein is the disgrace in living with perfectly well bred hens?

We follow the Cornell system entirely for we feel that Cornell has made a thorough study of this subject and we are willing to abide by the results of experiments of Professor Rice and his able assistants.

We lay no small part of our success to our market. We sell our eggs to hotels, restaurants and clubs where we obtain above the market price. Every egg is immaculate and they are packed in a special kind of carton in new cases. No wonder they look good enough to eat, these perfectly white eggs, absolutely spotless. No wonder we could sell them as many eggs as we produce, for our customers know absolutely the quality will be maintained.

Summed up, the essentials for success in the poultry business are:

- Chicks and hens of strong "Constitutional Vigor."
- Plenty of food (Cornell Rations).
- A good market.
- Good care and infinite pains with great stress on the "pains."

Subscribe Now for
The CORNELL COUNTRYMAN
is food for thought as well as for crops this year.

When shipments were interrupted by the war, it was estimated that there was enough Potash on hand in the United States to provide two and three per cent Potash in mixed fertilizers for this spring’s trade. Some manufacturers had more than enough for these percentages.

Since then minor sources of Potash have been fully utilized, and additional shipments from the usual source are still being received.

The supply is below normal, but there is no need to prevent farmers from securing some Potash in their fertilizers, nor should it lead farmers to decide not to use fertilizers.

There is no reason to return to the out-of-date goods without Potash, although some authorities may try to “wish” them on us.

We have not used enough Potash in the past. The largest annual import of Potash was only one-seventieth of the Potash taken from the soil by our 1914 corn crop and only one-fifteenth of the Potash lost every year in drainage water.

Spring crops use from two to ten times as much Potash as Phosphoric Acid. Get as much Potash in the fertilizer as possible. A few firms are offering to furnish from four to ten per cent.

There is no substitute for Potash. It may be harder to get just now, but POTASH PAYS.

GERMAN KALI WORKS, Inc., 42 Broadway, New York
Chicago, McCormick Block
Atlanta, Empire Bldg.
San Francisco, 25 California St.
Savannah, Bank & Trust Bldg.
New Orleans, Whitney Central Bank Bldg.

A few cockerel pullets and mature breeding hens will be offered for sale for October and November delivery.

Breeding Stock: A good supply of Single Comb White Leghorn breeders is available and poultrymen should let us know their needs. A few good breeders of the following varieties may also be furnished: Barred, White and Buff Plymouth Rocks, Rhode Island Reds, Mottled Anconas, Pekin, Rouen and Indian Runner Ducks and Toulouse Geese.

Four Good Records by S. C. White Leghorns

<table>
<thead>
<tr>
<th>Breed</th>
<th>Eggs laid 1st year</th>
<th>Eggs laid 2nd year</th>
<th>Eggs laid 3rd year</th>
<th>Total Eggs laid 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>200</td>
<td>191</td>
<td>648</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>171</td>
<td>159</td>
<td>575</td>
</tr>
<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
<td>166</td>
<td>532</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>142</td>
<td>108</td>
<td>220</td>
<td>560</td>
</tr>
</tbody>
</table>

Market Eggs, Poultry, Feathers, etc. are always available at the Sales Room.

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

In writing to advertisers please mention The Cornell Countryman.
Butter Made With CHR. HANSEN'S Danish Butter Color and Lactic Ferment Culture

Won First and Second Prizes at the following shows:
National Dairy Show, Chicago, Ill.
International Dairy Show, Milwaukee, Wis.
Dairy Cattle Congress, Waterloo, Iowa.

Use Chr. Hansen's Rennet Extract Cheese Color
Rennet Tablets and Cheese Color Tablets

CHR. HANSEN'S LABORATORY
LITTLE FALLS, N. Y.
Box 1095

Successful Poultry Keeping
Continued from page 495

A vital factor in making a plant pay, is culling out drones, and keeping down feed bills.

The method I use is: In spring all broody hens are put in a colony house, and shipped to market alive as soon as I have enough to fill a crate. As it takes about a month to get broody hens laying, and then the chances are they will get broody after laying a few eggs, it is more profitable to sell at once, saving labor and feed. By this method, broody hens are never used as breeders.

After the high spring egg production on large commercial plants, a number of hens stop laying.

About the first week in June I go over all pens taking out all non-producers. These are shipped to market alive, at once.

For example—on June 1st we had 1962 hens; egg production 920; culled out 549 hens, (practically all before June 15th). July 1st hens 1413; egg production 906. By this method the feed bills follow production, and drones are sold early while prices are high.

This culling is repeated in July, August and September. In October they are gone over for molting and weight. The final selection being made in November.

We do not use for our own breeders any hen that does not weigh 4 lbs. or over, or starts to molt before October selection. These heavy, late molting hens are mated to 5 lb. or heavier cockerels of known parentage. These are from 12 hens that did not molt until after November 1st, and weighed 4½ lbs. (or more) and a strong, vigorous 5 lb. cockerel. This spring I will use a 5 ¾ lb. cockerel from the above mating to 12 special hens, for next year's cockerels.

With efficient management and care poultry can be made one of the best, if not the best paying branch of agriculture.
Seeds with a Lineage

Unequalled original "stock," improved by seventy-five years of most careful cultivation and selection, make Carters Tested Seeds the "Seeds with a Lineage."

CARTERS TESTED SEED include grass, flower and vegetable seeds of every desirable variety. Used rightly, they will give your grounds the same rich beauty that distinguishes the notable Gardens and Estates of Old England. Ask any gardener with experience in Great Britain. He will tell you that Carter's Seeds are unequalled.

Write for our 1915 catalogue—"Garden and Lawn."

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BOSTON, MASS.

Branch of JAMES CARTER & CO.

Raynes Park, LONDON, ENGLAND
FOR SALE

A PRIZE, MONEY-MAKING FRUIT, GRAIN
AND STOCK FARM - - - 150 ACRES

In a superb location, and part of the celebrated John Johnston Farm near Geneva, N. Y., where the first tile-draining in America was done. Good and ample buildings, woven wire fences, five feet high, on cedar posts, set in cement; tile drained, rural free delivery and telephone; is within three miles of Geneva and four of Waterloo, with State road most of the way to each. An unsurpassed view of Seneca Lake, Geneva and rich surrounding country. Geneva is a thriving and beautiful city on Seneca Lake and the home of Hobart College, Smith College and New York State Agricultural Experiment Station, with excellent schools and best markets. Loading switch on Lehigh Valley R. R., three quarters of a mile distant. The very best of land, in splendid condition, having been the home of herds of cattle, colts, hogs and sheep for 80 years. Present owner has grown 44 bushels of wheat to the acre, also finest clover, timothy, alfalfa, potatoes, barley, oats, corn, peas and beans. Canning factories at Geneva and Waterloo consume immense quantities of beans, peas, sweet corn, squash, pumpkins, apples, pears, cherries and plums. Waterloo-Geneva trolley within one and one-half miles. Quick night and day service by New York Central or Lehigh Valley R. R. to Albany, New York, Buffalo, Toronto, Boston, Philadelphia, Baltimore and Washington. This farm is on highway, Geneva to Ithaca, which will probably soon be a State road. Present owner expects to occupy the adjoining farm, and would gladly be of any assistance to purchaser. For price, terms, etc., address owner

C. R. MELLEN
R. F. D., No. 5
GENEVA, N. Y.

This Tractor Works Anywhere---

Spoils No Crop By Packing

The Caterpillar is the one tractorable to work on rough soft or swampy ground. See the one owned by the State College and you'll understand why it won't skid, mire or pack the soil.

The Caterpillar is built in three sizes—a size for every farm. The Junior Caterpillar—30 and 20 horsepower—

is built particularly for medium size and small farms. Its easy-handling, short-turning ability make it ideal for orchard cultivation, or for working into the corners of small fields.

Ten years service prove the Caterpillar's worth—its use by four European armies shows it equal to the most severe service. Over 2,000 in use.

Write for Catalog No. 228

TIE HOLT MANUFACTURING CO., Inc.
PEORIA, ILL.
NEW YORK, N. Y.
The chief business of the farms is to furnish pure White Leghorn eggs for the fancy New York City trade. This plant is still in its infancy, and will be increased as fast as the business will warrant.

10, Sp.—In June, 1910, Miss M. V. Laudmann took up the management of the farm at the reform school for girls at Darlington, Pa., and has since been engaged in that work.

This school is a community of five hundred people, the girls performing all farm and garden operations, except the heavy team work.

10, W.P.C.—A. T. Moir was instructor in incubation and brooding under Professor Rice during a period from February 2, 1909, to March 1st, 1910. Since then he has been working in the Service Department of the Hall Mammoth Incubator Co. of Little Falls, N. Y. He is employed as a travelling expert; going from plant to plant to assist poultrymen in solving incubator and brooding troubles. His address is 49 Birch Street, Manchester, N. H.

10-11, W.P.—L. B. Carpenter is the proprietor of the Oak Knoll Poultry Farm, which is located at Pittsford, N. Y. He has been in the poultry business for four years. At Oak Knoll large S. C. White Leghorns are bred for the heavy production of large uniform white eggs. The same method of selecting breeders as is used at the College is employed, and Cornell balanced rations, are used.

10-11, W.P. C.—Miss Clara M. Chase sends us an account of her poultry plant at Gates, N. Y. Gates is located two miles from Rochester. She is on a 63 acre farm belonging to her father. After taking the Winter Course she started in with White Leghorns, purchasing eggs from Professor C. A. Rogers of Bergen, who has the Cornell strain. From those...
Dewey's
READY RATION

Guaranteed Analysis: 25 per cent Protein, 7 per cent Fat, 9 per cent Fiber, 50 per cent Carbohydrates.

Composition: Eagle Distillers' Dried Grains, Choice Cottonseed Meal, Old Process Linseed Oil Meal, Winter Wheat Bran and Middlings, Pure Hominy Feed, Malt Sprouts, 1/2 per cent Salt

Dewey's Ready Ration, when fed in connection with the home grown hay, straw, fodder, ensilage and roots forms a perfectly balanced ration. It is complete grain ration for dairy cows. No other feed or grain need be fed with it.

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The feed question is not or should not be one of price per ton, but of how much milk each dollar's worth of feed will produce. Dewey's Ready Ration is worth all it costs, because it is scientifically blended from the highest grade feeds to produce for you all the milk possible for each dollar that you pay. "The proof of the pudding is in the eating." Try Dewey's Ready Ration. Give it a chance to convince you.

The Dewey Bros. Co.
Box 597
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Neither heat nor cold passes through walls. Inside—thick, vertical wooden staves. Next—waterproof felt, like rubber roofing. Outside wall—the Craine-Lox Cypress siding, continuous and overlapping. Airtight and frost proof. No iron hoops to adjust. Improved ladder and door. A scientific silo, pleasing to the eye, backed by 13 years of success. We give

A GUARANTEE

that absolutely insures you as to material, length of service, strength of construction, stability against winds, etc.

Write for booklet and proof of this genuine silage insurance. A Craine Silo factory near every stock section is cost low. Let us give you the facts about Craine Silo factory.

ILUMBER CO. Norwich, N.Y. 27-37 Main St.

FORMER STUDENTS

subscribe to

The Cornell Countryman

Continued on page 518

eggs about 200 pullets were raised the first year. Each year the numbers have been increased until now there are 500 pullets and at least 600 hens for brooders. These are kept in two laying houses, one 20 ft. by 80 ft. of four pens; the other 20 ft. by 110 ft. having five pens and a 10 by 20 ft. feed room. Both these are the Cornell type of laying house and have three-quarter partitions. Instead of using muslin curtains, the horizontal window of each pen is hinged at the bottom, and this can be let down entirely or put back any distance, but is never entirely closed. This arrangement is found very satisfactory.

The day-old chick business and custom hatching are both profitable, the former being very profitable up until the middle of June.

'11, B.S.A.—Frank Hahnel, after hunting around the West for two years for a suitable location has decided that New York is the best place for him and is now getting into shape a 180 acre general farm near Yale, N. Y. His address is Romulus, N. Y., R. F. D. 2.

'12, B.S.—Don E. Ward is with the U. S. Dept. of Agriculture, engaged in Field Investigations in Pomology for the Bureau of Plant Industry. The following is a summary of his career since June, 1912. In the summer of 1912 he entered the Department of Agriculture as a Scientific Assistant, the work consisting chiefly of investigation and study of grape growing in the north-eastern states and the study of varieties and different methods of pruning, cultivation, and fertilization of grapes in the Ex-

Former Student Notes
Continued from page 515

Where you saw it will help you, them and us.
Don't Buy a POWER SPRAYER until you see ours. Send for our complete catalogue of Hand and Power Sprayers and Accessories. Our outfits are complete, ready to run. No extras to buy.

Let us send you full description of this light Draft Orchard Harrow. A tool that will cultivate 15 to 25 acres per day. Invaluable in the orchard and a money saver for general farm work. If your time is money this tool means good dollars to you. Send for full description and testimonials.

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Where do they get their Feathers?  
Their Bone?  Flesh?

These have to develop from one source—their feed.
H-O Steam-Cooked Chick Feed is made of clean, sweet grains, including cut oat meal, scientifically mixed to give chicks just the food they need for rapid development.

H-O Steam-Cooked Chick Feed

Write for free sample, prices and descriptive folder

The H-O Company  
Mills,  
BUFFALO, N. Y.

J. J. Campbell  
General Sales Agent  
Hartford, Conn.

This brand has established  
a new standard for  

V.M.  
Pure Beef Cracklings  

BEEF SCRAP

THE FLAVELL CO.

ASBURY PARK, N. J.

Former Student Notes  
Continued from page 516

experiment Vineyard at Vineland, N. J. About a year ago he was transferred to the Office of Fruit Identification where he has been to the present.

In that office a complete record of all varieties of fruit, together with descriptions and paintings of the same are kept. In some cases, as with the peach, plum and cherry, a collection of the pits of the different varieties are kept on file for use in identifying these varieties. Fruit is received in this office from all parts of the United States for identification and naming, as well as new varieties for testing and recording, if worthy of propagation. More apples are received for identification than of any other fruit.

'13, B.S.—Kenneth R. Boynton's address is Care Bronx Park Botanical Garden, New York City.

'13, B.S.—E. C. Crippen is running his father's 160 acre farm at Brockport, N. Y. He harvested a good crop of Baldwin Apples this year.

'13, B.S.—O. U. Schaeffer attended the 1913 Summer Session, served as principle of a Boys' Agricultural School at South Lee, Mass., for six weeks, then travelled through the Middle West for three months studying agricultural conditions.

During the spring of 1914, he was connected with one of the largest nurseries around Rochester, N. Y., gaining some very valuable experience in that business.

During the past summer he was engaged in trimming fruit and ornamental trees, spraying, and tree surgery in Rochester.

He was married to Miss Pearle Siems, of Albion, N. Y., on August 5, 1914. At present he is engaged in the poultry business and the growing of small fruits and vegetables near Albion, Orleans County, N. Y.

'12-'13, W. P. C.—W. J. Buss, of the Agricultural Experiment Station  
Continued on page 520
Light your house and Barns
Cook your meals with
HOME-MADE ACETYLENE
and make your acetylene with a
PILOT LIGHTING PLANT

PILOT plants make Acetylene automatically a little at a time as you use it in your gas cooking stove and in your lights distributed throughout your house, your barns and out-buildings. You simply fill the generator with the gas-producing stone "Union Carbide" and water about once a month.

PILOT plants are approved by the National Board of Fire Insurance Underwriters.

All told, over 250,000 country homes are using Acetylene made the PILOT way.
A complete PILOT plant, consisting of generator, pipes—handsome light fixtures, and gas cook stove, can be installed in any country home in a few day's time.

Such a plant is a permanent improvement and will furnish you with the cheapest, safest and most practical light and fuel now available for country home requirements.

Write for our advertising catalogs and descriptive booklets giving all the facts.

Oxweld Acetylene Company
Eastern Works, Newark, N. J. 646 Frelinghuysen Ave.

Lime for Your Land

For lightening clay soils and sweetening sour ones, for increasing the vigor and brightness of grass, for decreasing the growth of weeds

100% pass 25 mesh screen
95% " 50 " "
90% " 100 " "
61% " 250 " "

No acid soils will not produce
A clover sod that's fine,
So if I have a sour soil
I use MEDINA LIME.

100% pass 25 mesh screen
95% " 50 " "
90% " 100 " "
61% " 250 " "

Our lime is the finest ground, making it immediately available for crop raising thus assuring the farmer quick returns.

As you see, 100 lbs. of our Lime is equal to 105 lbs. of any pure Cal. Carb. for neutralizing soil acidity.

So If You Don't Buy From Us We Both Lose

Why not use the highest test and the finest ground? Sold in paper bags both far and near. Price, $2.50 per ton, f.o.b., Medina, N. Y.

What Prominent Authorities Say: "Raw ground limestone mixed with stable manure, is a perfect fertilizer." Why, then, do you pay from four to seven times the price for other kinds of fertilizers? Our raw ground limestone means economy.

Send your order today, to the

MEDINA LIME COMPANY, Medina, N. Y.
EDWARD SIMPSON, PRESIDENT

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Meridale Jerseys

Three Meridale heifers have recently been purchased by Professor Wing for the College Herd. It will pay you to look them over. They are daughters of Gertrude's Jap 93947 out of Sayda's Heir 3d 74817, combining the blood of two prominent Meridale families.

At the Meridale Farms emphasis is placed upon production, while correct dairy type is a characteristic of each of the four families represented.

The average yield of 135 tested cows last year was 7892 lbs. milk, 512 lbs. butter per cow, which indicates the high producing ability of the herd.

Booklets on request.

Ayer & McKinney
300 Chestnut St. PHILADELPHIA, PA.

Ripe Tomatoes

EARLIER THAN YOU EVER HAD THEM BEFORE

No danger from frost, cold winds or late springs when protected with THE BALL SEED AND PLANT FORCER

Enables you to set out your plants two to three weeks ahead of the other fellow. The same thing can be done with all kinds of seeds and plants.

We have a special Forcer for CANTALOPE GROWERS that is a gold mine to the man who grows for the early market. Cheap enough to use them by the thousand.

CUCUMBERS—MELONS and any kind of vegetables can be matured two to three weeks earlier than by any other method. Take the hint—it's the early crops that bring in the money.

Send for my 40 page catalog beautifully illustrated with pictures and letters from the leading Agricultural Experiment Stations as well as customers who have tested and proved beyond a doubt that there is a new era in store for the produce grower who realizes the importance of being first fiddler on the early market. Write now; delay means lost opportunity. Costs you nothing but one cent on a post card, and it may mean the difference between loss and profit this coming season.


Former Student Notes

Continued from page 518

at Wooster, Ohio, gives the following account of himself and a description of his poultry plant.

"Since leaving Cornell in February, 1913, I have been in charge of experimental work with poultry at the Ohio Agricultural Experiment Station. Very interesting results in comparison of range and confinement for laying hens were secured during the past year. Two lots of 57 S. C. White Leghorn pullets each, fed and housed alike, one lot having access to a well sodded plot of bluegrass, while the other was confined to a very small bare lot, were used in this experiment during the past year. The pullets on range averaged 182 eggs each, while those in confinement averaged 139.

During the past summer, Mr. F. K. Shibley and I purchased a 30 acre tract of land situated on the electric line 6 miles north of Wooster. This is to be developed into a commercial egg farm. The farm is ideally located for this purpose. The egg cellar is only 50 feet from loading platform on the electric railway. The farm is only 2 hours ride from Cleveland, where eggs will be marketed. A siding 200 feet from the feed room, is used for unloading grains, straw, etc. An electric motor is used to supply power for grinding feed. Current for operating motor is secured from the railway company at very reasonable rates. The cost is about 12 cents for grinding 100 bushels of corn.

We have at present 1,800 S. C. White Leghorns, which we hope to increase to 6,000.

Two laying houses, 24 x 108, 4 brooder houses 14 x 28 and an incubator cell 24 x 32 with feed room above, have been erected. Two 3,000 egg incubators have been installed. Coal burning brooder stoves will be used for brooding chicks. Our farm is known as the "Everfresh Egg Farm."
FRASER'S TREES
Are Cheapest
because
They are BEST

\[ \begin{align*}
\text{\$ You pay more for certified milk than for dipped milk and it is worth it. There is more value in it; more work has been put into producing it, and even at a higher price you get value received.}
\text{\$ So it is with Fruit Trees. I put extra care into the cultivation of my trees; I bud from parent trees that I know are true to name, and productive sorts. I give the greatest value for one dollar that you can get.}
\end{align*} \]

Write for Fraser's Tree Book
Send a postal now. It is free.
Whether you want one tree or are planning to set an orchard write me or come and see me.

SAMUEL FRASER
Fruitgrower and Nurseryman
96 Main Street GENESEO, N. Y.

WELL ROTTED HORSE MANURE
DRIED and GROUND
(Diamond Brand Compost)

A natural manure for the use of Truck Growers, Farmers and General Farming Purposes.

It is largely Humus and rich in Plant Foods—Nitrogen, Phosphoric Acid and Potash—which are immediately available.

Positively free from weed seeds.
It will please the most critical grower and insure good results.

Put up in bags of 100 lbs. each.

Write for Circular "R" and prices

New York Stable Manure Co.
273 Washington Street
Jersey City, N. J.

HEBERLE BROTHERS Nurseries
New Brighton, N. Y.
Founders of
THE NEW ROCHESTER PEACH
Trees of all kinds for the Fruit Grower
Write for Catalogue

The Jersey Are NOT SHORT-LIVED
In 1934 eighteen Jersey cows were officially tested which averaged 12 years and 7 months of age. Average milk production 8077 lbs. Average butter fat 387 lbs. Longevity, Constitution and Economic Production are Jersey characteristics.

The American Jersey Cattle Club
324 W. 23d St. New York City

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Blank books ruled and bound to order
Have your COUNTRYMAN bound
We bind theses, notes, etc.

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113 N. Tioga St.

HEMINGWAY & COMPANY, Inc.
Bound Brook, N. J.

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If so, why not use a SIMPLICITY MILKER which allows no air to come in contact with the milk which makes the Bacteria count very low? All parts of the Milker, including all the rubber can be sterilized with steam which does away with the use of brine solution. Why not use a Simplicity Milker and do away with so many parts to wash and keep in repair? Which color cap are you going to have on your milk bottles? Write and find out the cleanest and cheapest way to have the best cap on your bottles.

We have both the single and double Milkers.

F. Groff & Son
St. Johnsville, N. Y.

Purebred Registered

HOLSTEIN CATTLE

The increased recognition of the value of purebred registered Holstein Cattle is shown in the number of certificates of registration and transfer issued by this association last year as compared with the previous year. The increase is over 21½ per cent., while the gain over 1912 is 36½ per cent. The fact that no other dairy breed association approaches the number of certificates we have issued, should certainly be significant to you if you have been “on the fence” wondering whether or not you should by Holsteins.

Send for FREE Illustrated Descriptive Booklets

HOLSTEIN-FRIESIAN ASSOCIATION of America
Box 196 Brattleboro, Vt.

Where you saw it will help you, them and us.
It’s Easier, Cleaner, Quicker

— for one man to milk 20 or more cows with a B-L-K Milker than it is for two men to do the same number by hand.

Ordinary farm hands, too, can produce certified milk in ordinary stables by exercising reasonable care in handling the easily cleaned machines.

B-L-K Milkers

cut cost and labor of milking in two

If you are interested in producing high-grade milk, and greater profits, then write us.

Send a postal for B-L-K Booklet. Illustrated and full of information FREE

If, when writing for the booklet, you will send us a rough plan of your barn and tell us the number of cows you want to milk, and state what power you intend using, we will tell you about what a B-L-K Outfit will cost you. But send for the booklet by all means.

D. H. BURRELL & CO.
LITTLE FALLS, N.Y.

Manufacturers also of
"Simplex” Link-Blade Cream Separators and other “Simplex” specialties.
"THE BEST IN THE WORLD."

MILK PROTECTION

So thorough are the cleaning properties of

Wyandotte

Dairyman's Cleaner and Cleanser

that it cleans far beyond what the eye can see, removing thousands, yes millions of bacteria, the destroyers of the food value of milk and milk products.

This protection to the milk means cleaner milk, higher quality milk, and better milk products, and consequently better prices throughout.

For the convenience of dairymen, milk dealers, butter and cheese makers, Wyandotte Dairyman’s Cleaner and Cleanser is sold by practically all Dairy Supply Houses. If your dealer cannot supply you write your regular supply man.


This Cleaner has been awarded the highest prize wherever exhibited.
How Can You Expect Fertile Hatching Eggs If You Don't Condition Your Poultry Now?

On the condition of your poultry right now depends the fertility of your hatching eggs and the health of your spring hatches. Start in at once to condition your flock. Get your hens in a healthy, thrifty condition, see that their dormant egg organs are toned up and kept active. If ever the poultry raiser is in need of eggs, it is surely right now. Under the most liberal guarantee ever put in print (read below) I want you to try

Dr. Hess Poultry PAN-A-CE-A

Not a Stimulant, But a Tonic

In this scientific poultry preparation I have put every ingredient that my 26 years' experience as a veterinary scientist, doctor of medicine and successful poultry raiser tells me that poultry need to keep them well and make hens lay.

My Pan-a-ce-a will put stamina into your flock, will prevent cholera; it is also a splendid constitutional treatment for roup and is a sure cure for gapes, leg weakness, indigestion and the like. But, above all things else, I guarantee that it will make hens lay eggs. Now, here is my guarantee—read every word:

So sure am I that Dr. Hess Poultry Pan-a-ce-a will make your poultry healthy, make your hens lay, and help your chicks grow that I have told my dealer in your town to supply you with enough for your flock, and if it doesn't do as I say, return the empty packages and get your money back.

Sold only by reliable dealers whom you know—never peddled. 1½ lbs. 25c; 5 lbs. 60c; 25-lb. pail $2.50; except in Canada and the far West.

Send for my free book that tells all about Dr. Hess Poultry Pan-a-ce-a.

DR. HESS & CLARK - Ashland, Ohio

Where you saw it will help you, them and us.
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<th>100</th>
<th>200</th>
<th>300</th>
<th>500</th>
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<tbody>
<tr>
<td>Price</td>
<td>$2.25</td>
<td>$5.00</td>
<td>$9.00</td>
<td>$13.00</td>
<td>$21.12</td>
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<tbody>
<tr>
<td>REUBEN FOX TROT</td>
<td>Albert and Monroe Jockers</td>
<td>12 in.</td>
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<td>Prince's Band</td>
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<th>Record Name</th>
<th>Artist</th>
<th>Format</th>
<th>Price</th>
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<tbody>
<tr>
<td>MOONGLIDE WALTZ</td>
<td>Prince's Band</td>
<td>12 in.</td>
<td>$1.00</td>
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By L. S. HAWKINS

THE DEPARTMENT OF RURAL EDUCATION AND THE RURAL SCHOOLS
By G. A. WORKS

THE SOILS AND AGRICULTURE OF THE SOUTHERN NEW YORK HIGHLAND REGION
By E. O. FIPPIN

REMINISCENCES OF A FRUIT GROWER
By B. J. CASE

MEAT SUBSTITUTES
By ANNA E. HUNN

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From Montana—The plants came through quickly and in fine condition. Matt W. Anderson, Lewis and Clark County.

From New York—Wish to acknowledge for the Station, the receipt of strawberry plants. Arrived in good condition. A. M. Taylor, Geneva, N. Y.

From Florida—Plants received in fine condition and everything satisfactory. I. W. Peck, Manatee County.

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You will find it in some good books that you had overlooked. You will wisely read some books besides the required textbooks. Our list is classified as to subject and the better books are printed in heavier faced type. Ask for a copy.

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On the Campus

Where you saw it will help you, them and us.
THE CORNELL COUNTRYMAN

CONTENTS for APRIL, 1915

COVER—"WHAT ARE YOU WAITING FOR?"
Photo by Verne Morton

FRONTISPIECE - - 558

AGRICULTURE IN THE NEW YORK STATE HIGH SCHOOLS
By Layton S. Hawkins 559

THE DEPARTMENT OF RURAL EDUCATION AND THE RURAL SCHOOLS By George A. Works 563

THE DISTRIBUTION OF EGG PRODUCTION By James E. Rice 566

REMINISCENCES OF A FRUIT GROWER By B. J. Case 571

THE MIDDLEMAN, AN EDUCATIONAL FACTOR IN THE IMPROVEMENT OF THE QUALITY OF EGGS By C. J. Chandler 574

THE NEW YORK STATE SERIES—
ARTICLE No. 6—THE SOILS AND AGRICULTURE OF THE SOUTHERN NEW YORK HIGHLAND REGION By E. O. Fippin 578

MEAT SUBSTITUTES By Miss A. E. Hunn 585

EARLY DAYS IN THE HISTORY OF THE COUNTRYMAN By E. L. D. Seymour 587

GARDEN LILIES - - 589

EDITORIALS - - - 590

CAMPUS NOTES - - - 592

FORMER STUDENT NOTES - - - 595
THE CORNELL COUNTRYMAN

Vol. XII APRIL, 1915 No. 7

AGRICULTURE IN THE NEW YORK STATE HIGH SCHOOLS

BY LAYTON S. HAWKINS

Specialist in Agricultural Education, The University of the State of New York

The time has come when the country high school needs to be something more than a preparatory school for the literary colleges. It must be broad enough to meet the most pressing needs of its constituents. Since agriculture is the dominant industry in the environs of seventy-five per cent of the public high schools of the state, it seems wise for these schools to use the educational opportunities of this industry. To this end the New York State Legislature has enacted a law authorizing the Commissioner of Education to apportion public money for the partial support of agricultural courses in the schools. All the money thus apportioned must be used exclusively for the payment of the salaries of teachers employed in this field of instruction (including mechanic arts and homemaking) and is in amount equal to two-thirds the salary of the first teacher plus one-third the salary of each additional teacher. By a district vote any school district in the state may authorize the establishment of such a department or course. Thus far forty-eight of these courses have been organized and present conditions indicate that eventually all of the rural high schools will be giving instruction in agriculture.

Fully as important as the number of schools taking up this work is the type of instruction given. The plan of organization provides that about one-half the pupil’s time during the four years shall be given to the study of agriculture, and the other half to English, history and mathematics. Since agriculture deals with concrete material and is to a great extent objective, much of the time given to this subject is spent in the field and laboratory, connecting in as many ways as possible every-day objects and occurrences with the general principles of science. For this purpose the barns, machinery, herds, flocks, fields and crops of neighboring farmers are usually accessible and available. Each school also has a shop for general construction and repair work in wood and iron, a laboratory equipped to carry on demonstrations and experiments necessary for an understanding of the underlying science, and a library of books and bulletins dealing with the best science and practice. Each school includes in the work of the four years something of wood and iron construction, poultry husbandry, agronomy, fruit growing, animal husbandry and dairying, farm machinery, and farm management; but the amount of time given to each branch and the phases emphasized depend, to a large extent, upon local conditions. In any case the availability of concrete material determines the sequence of topics;
hence, in some lines the season determines the order of topics for the greater part of the year. In scope, the high school work confines itself to accepted facts or to general practices where experimental data is insufficient to clearly establish facts.

Although great emphasis is placed on concrete class instruction, this, by itself, does not go far enough. In order that a boy may really fix his knowledge of poultry husbandry it is necessary for him to engage in the poultry business. In order that he may gather together his knowledge of agronomy it is necessary for him to grow a crop and that in accordance with what he has learned about crop production. Incidentally, in this way he gets much information about the subject which he never could get from class, laboratory or books. With these ends in view each pupil is required to carry on at home a project in that line of agriculture which he is studying in school each year. About the first of March the time given to general instruction is greatly reduced and each pupil works on the plans for his project so that, when the time comes to launch the enterprise, he has a definite course of procedure. From the time the project starts the pupil keeps accurate accounts of all income and expenditure, including his own time, and at the end analyzes his own business. Parents are also interested in the project. The boy and the teacher consult with them from the beginning. The teacher explains to the parents that these schools of agriculture are conducted on the principle-
that there are still educational opportunities at home and that the school, in order to perform its functions properly must make use of those opportunities. The father must be in sympathy with the idea that the school and the home need to work hand in hand to offer the best educational advantages to the boy. Besides the educational value to the boy, the home project plan gives to the teacher a better idea both of the home conditions of particular boys and of the general farming conditions of the teacher during this summer period, he also has opportunity to collect materials and make plans for the work of the coming school year. He becomes better acquainted with the farmers and the farming of the community and finds many opportunities of letting the people know what the school is doing and can do for them.

Besides the classroom instruction and the supervision of the home projects of boys regularly enrolled in a four-year course in agriculture, there are other activities carried on by these

Farm Boys, Attention!

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COME TO

Middletown High School

FOR THE

SHORT COURSE IN AGRICULTURE

November 30 to March 27

The Agricultural Work will cover in a practical manner with special reference to local conditions:

FARM ANIMALS, including POULTRY, FARM CROPS
SOILS and FERTILIZERS and FRUIT GROWING

Besides classroom discussions, special laboratory and farm practice will be given in such subjects as

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JAMES CLIFFORD OTIS
Agricultural Department,
Middletown High School

THE WAY THE SCHOOLS SEEK TO SERVE THE PEOPLE—A SHORT COURSE NOTICE

community. It helps to keep his teaching within the realms of possibility.

In order that the teacher of agriculture may be available to supervise the projects during the summer months, the Commissioner of Education is authorized to apportion two hundred dollars to each school district which extends the contract with said teacher to cover the full year. Although supervision of home projects is the primary business of the weeks schools. Short courses of two to three months in length are conducted for those who for any reason are prevented from attending the regular course. A few of the schools offer evening instruction. Week extension schools from Cornell have been held at several of these schools. Five of the teachers supervise the projects of the boys and girls clubs during the summer.

Although the extension field is broad and affords plenty of room for
A VISIT TO THE HOME OF ONE OF THE PUPILS TO SCORE A PURE BRED MARE

many agencies, it is generally conceded that in order to secure the best results for the energy expended it is best for all such agencies to act in cooperation. The county farm bureau is at present the logical center for cooperation. These schools are now working in close cooperation with the

with a number of farmers. It is but natural they should ask him for advice and assistance. If he could not help them he directs them to the proper sources for help. Last year school spray pumps were used on more than five thousand trees, one school alone spraying over twelve hundred. The milk from nearly five hundred cows was tested in school testers. In these and many other ways the school is beginning to function in the life of the community.

There are certain points which should be noted as characteristic of these departments or schools:

1. They are universal in the sense that any school district may establish one.

2. A department may be established only when public sentiment as expressed by a majority vote favors it.

3. Although the state aids in the support of the school, the community must pay its share.

4. At least one trained teacher must give his whole time to the work.

5. The work continues whether or not school is in session.

6. The school and the home are joined in an educational enterprise.

7. The instruction is suited to the local community.

HAMBURG HIGH SCHOOL CLASS STUDYING POULTRY. THESE PUPILS ARE JUDGING ORPINGTONS, LEGHORNS AND WYANDOTTES

county agents. Ten of the present Farm Bureau Agents are former teachers of agriculture and thoroughly understand the possibilities of the teacher acting as local agent. The teacher in visiting farmers to arrange for field demonstrations and in visiting the home of pupils to assist them with the projects becomes well acquainted
THE DEPARTMENT OF RURAL EDUCATION
AND THE RURAL SCHOOLS

BY GEORGE A. WORKS

Professor of Rural Education, New York State College of Agriculture at Cornell University

The establishment of a department in a state institution carries with it the implication that there is a need on the part of the state for such a service as the department can render. The magnitude of this service should grow with the age of the department, but even the youngest department of home making. The development of this phase of education in New York State, as in nearly every other state, has been handicapped by the lack of adequately prepared teachers. The high school teacher of these subjects should have a thorough but broad technical preparation. At the present

A SCHOOL FAIR, ATLANTA, N. Y., HIGH SCHOOL AGRICULTURAL EXHIBIT.

an institution is entitled to its visions. To indicate, even briefly, to the readers of THE COUNTRYMAN some of the plans of the department of Rural Education is an opportunity. Some day the department may need your assistance in making concrete these visions in your home community.

The most marked development in secondary schools in rural communities during the last decade has been the growth of work in agriculture and stage of development of the work the need is not for the specialist but for teachers with the well balanced preparation. To this technical training should be added good professional training. Secondary school authorities have come to recognize the value of proper pedagogical preparation on the part of teachers entering the service. To furnish such training constitutes a problem for higher institutions. This department in co-opera-
tion with the various subject matter departments of the college and the School of Education will endeavor to supply high schools teaching agriculture and home making with well qualified instructors. Upon the possibility of securing such teachers depends the success of the work in agriculture and home making in our scheme of education. Such work must be found in our high schools if we are to have true democracy in secondary education.

There is need on the part of these schools for more intimate touch with those prepared to give instruction in elementary agriculture and home making. In the preparation of teachers for secondary schools an effort will be made to prepare them in such a manner that they may assist the country schools. Every rural high school teaching agriculture and home making should be a center to which rural school teachers may look for assist-

These teachers of agriculture and home making must go out with a broader vision than that of the classroom. They must have an intelligent interest in life in the open country and a different ideal of relationship between school and community than is usually found. They must be willing to consecrate their services to making the life of the school and community one. This broad relationship is needed even more for the benefit of the school than for the good of rural communities.

The department through the Rural School Leaflet reaches a large proportion of the elementary rural schools. They must also become sources of help to the young people of the community who are unable to attend school throughout the entire year or are unable to complete the regular course.

For some time the department has encouraged contest work for children. This work has passed the probationary period. It has demonstrated its value. To further develop this work upon a sound educational basis, and as an integral part of the work of the school is one of the department’s plans. This will not be easy because of the tendency to exploit young people in the name of agriculture. What is needed
is a sane selection of subject matter suited to the educational needs of young children in rural communities. To do this requires time and much effort. It is not a showy process. As a result such work is being neglected in many places in order that more spectacular things may be done. Every true friend of education and of agriculture in New York State will seek to do the less spectacular but the more permanent work.

YIELD—311 BUSHELS PER ACRE. HOME PROJECT OF ELSWORTH WOLFANGER, ATLANTA, N. Y.

The summer school of the College of Agriculture has served in an excellent manner large numbers of teachers during past years. Their appreciation of its service is shown by the constant increase in attendance on their part. The direction of this phase of the College's activities has been put in this department. An effort will be made to broaden the scope of the work in the summer session, and as far as possible better adapt it to the needs of teachers. The establishment of the third term will make this adjustment more readily possible.

There is no space in this brief article to mention any of the other plans which have been started or include a statement of those which as yet exist only on paper, and which we hope time will make a reality, but I wish to assure every friend of rural education that these plans include nothing that is not intended primarily for the benefit of the young people in the Rural Schools of New York State.
THE DISTRIBUTION OF EGG PRODUCTION

BY JAMES E. RICE
Professor of Poultry Husbandry, in collaboration with O. B. Kent, '12, Instructor in Poultry Husbandry, and F. D. Brooks, '17, New York State College of Agriculture at Cornell University (To be concluded in the May number)

PART III

What is the Most Reliable Method of Determining the Relative Laying Capacity of Fowls?

This question has been variously answered by persons who have undertaken to breed poultry for egg production and who have endeavored to mate fowls with reference to their fecundity factors.

It is apparent that to decide upon a standard for measuring the relative productivity of fowls is a problem which should be uppermost in the minds of breeders of poultry for egg production. This is of equal importance to the investigator who must first decide upon an accurate method of rating the individuals to be used in his mathematical formulas as it is to the practical breeder in making up his breeding flocks. It is axiomatic that the terms of an equation must be correct if we are to expect a true solution of the problem. If, for example, characters $H$, $N$, $L$, and $A$ are to represent high, normal, low, and absence of the fecundity factor respectively, one must be assured that the terms of the equation accurately fit the birds to be mated. The birds in the breeding flock and their offspring, rather than mathematical symbols, are the real terms of the equation. They are the final proof of the accuracy of the formula which they are supposed to represent. The making of mathematical equations may be considerably easier than waiting for the slower process of breeding to secure the final results. It is also liable to be quite as hazardous when put to the ultimate test. Mating the birds and observing the productive powers of the offspring should always supplement any mathematical explanation or biometrical formula that may be used to explain theories of heredity. Moreover, breeding practice should both precede and follow the theories of inheritance as expressed by mathematical formulae. That is to say, the making of an equation to explain a theory regarding laws of inheritance should be preceded by sufficient evidence to warrant belief in the accuracy of the theory and the correctness of the assumed "known" terms of the equation, and also should be followed by the actual matings that prove the soundness of the theory and the accuracy of the mathematical method. Hence, it becomes of the utmost importance before going far with the development of breeding formulas to ascertain how fowls differ in their production and then to try and decide upon a method of classifying and comparing individuals as to their performance. This is the logical first step to be taken in any system of breeding.

To compare some of the many standards by which the laying capacity of fowls possibly may be measured and with the hope of offering some evidence that may indicate whether or not we are justified in assuming that hens may be classified according to their laying records into "high", "medium", or "low", or "absence of fecundity" character groups, these data are submitted.

Purely for the sake of comparison and without presuming to recommend any particular method before putting it to the breeding test several standards of measurement may be considered in connection with data that follow.

In order to compare the productivity of the sixty-three fowls here discussed, they are rated in the order
**EIGHT METHODS OF COMPARING THE LAYING CAPACITY, FOR THREE YEARS, OF 63 SINGLE COMB WHITE LEGHORN HENS AT CORNELL UNIVERSITY**

**Table VII—A. Based on Age when First Egg was Laid.**

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Highest 33⅓%</td>
<td>21</td>
<td>188.52</td>
<td>33.71</td>
<td>41.81</td>
<td>151.14</td>
<td>122.43</td>
<td>136.79</td>
<td>111.76</td>
<td>128.44</td>
</tr>
<tr>
<td>Medium 33⅓%</td>
<td>21</td>
<td>209.19</td>
<td>27.62</td>
<td>37.76</td>
<td>148.67</td>
<td>136.29</td>
<td>142.48</td>
<td>127.81</td>
<td>137.59</td>
</tr>
<tr>
<td>Lowest 33⅓%</td>
<td>21</td>
<td>260.81</td>
<td>11.00</td>
<td>17.14</td>
<td>102.76</td>
<td>109.14</td>
<td>105.95</td>
<td>96.71</td>
<td>102.87</td>
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</tbody>
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<tr>
<th>B. Based on Production to March 1st.</th>
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<tbody>
<tr>
<td>Highest 33⅓%</td>
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<tr>
<td>Medium 33⅓%</td>
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<tr>
<td>Lowest 33⅓%</td>
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<tr>
<th>C. Based on Production for First 10 Months.</th>
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</thead>
<tbody>
<tr>
<td>Highest 33⅓%</td>
</tr>
<tr>
<td>Medium 33⅓%</td>
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<tr>
<td>Lowest 33⅓%</td>
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<tr>
<th>D. Based on &quot;First Year&quot; Production.</th>
</tr>
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<tbody>
<tr>
<td>Highest 33⅓%</td>
</tr>
<tr>
<td>Medium 33⅓%</td>
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<tr>
<td>Lowest 33⅓%</td>
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<tr>
<th>E. Based on &quot;Second Year&quot; Production.</th>
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<tbody>
<tr>
<td>Highest 33⅓%</td>
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<tr>
<td>Medium 33⅓%</td>
</tr>
<tr>
<td>Lowest 33⅓%</td>
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<thead>
<tr>
<th>F. Based on Combined 1st and 2nd years Production.</th>
</tr>
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<tbody>
<tr>
<td>Highest 33⅓%</td>
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<tr>
<td>Medium 33⅓%</td>
</tr>
<tr>
<td>Lowest 33⅓%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>G. Based on &quot;Third Year&quot; Production.</th>
</tr>
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<tbody>
<tr>
<td>Highest 33⅓%</td>
</tr>
<tr>
<td>Medium 33⅓%</td>
</tr>
<tr>
<td>Lowest 33⅓%</td>
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<tr>
<th>H. Based on Total &quot;Three Year&quot; Production.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest 33⅓%</td>
</tr>
<tr>
<td>Medium 33⅓%</td>
</tr>
<tr>
<td>Lowest 33⅓%</td>
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* Difference between highest and lowest groups based on average production for first three years.
of highest to lowest production based upon the number of eggs laid within specified periods. The relative merits of eight different methods of comparing production are shown. By these studies it was hoped to secure some additional information regarding a satisfactory standard for measuring the egg producing capacity of fowls, based on performance.

How difficult the problem is of forecasting the laying capacities of fowls may be seen by studying the egg yields and following the lines connecting the records of the fowls in Table VII and Figures III and IV.

The correlation between early laying age and high egg production is striking and consistent. The first three groups consisted of 75 per cent of the fowls that began to lay when they average about 7 months old, and when the oldest in the group to lay was less than 8 months old. The egg production for each of the three years and for each of the three groups was strikingly large in the younger-to-begin-to-lay groups. When the production of the first three groups representing practically three-quarters of the entire population is compared to the later-to-lay groups representing 42 fowls or 25 per cent that did not begin to lay until 8 to 10 months old, a striking contrast is observed. The difference in favor of the earlier-to-lay is for the first year, 150.60

### Table III

<table>
<thead>
<tr>
<th>Grouped according to age 1st egg was laid</th>
<th>No. of Hens</th>
<th>% of Total Hens</th>
<th>Ave. age when first egg was laid</th>
<th>Average Product 1st yr.</th>
<th>Average Product 2nd yr.</th>
<th>Average Product 3rd yr.</th>
<th>Ave. Total Pro. for first three yrs.</th>
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<td>151-180</td>
<td>4</td>
<td>2.37</td>
<td>176.25</td>
<td>173.25</td>
<td>135.75</td>
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<td>181-210</td>
<td>71</td>
<td>42.01</td>
<td>199.77</td>
<td>157.01</td>
<td>133.63</td>
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<td>211-240</td>
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<td>140.10</td>
<td>121.37</td>
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<td>476</td>
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<td>.59</td>
<td>359.00</td>
<td>45.00</td>
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<td>155.00</td>
<td>126.00</td>
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<td>169</td>
<td>100.00</td>
<td>231.08</td>
<td>136.92</td>
<td>124.48</td>
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Early Egg Production as an Indication of Prolificacy. Three Calendar Year Record of 169 S. C. White Leghorns at Cornell University.
Figures 3 and 4 show graphically, by lines, the comparative ratings of each fowl based upon the first year record, Figure 3, and the third year record, Figure 4. The same sixty-three fowls are considered in each figure. By following any line, forward or backward, one may trace the rating from first to sixty-third. The horizontal lines divide each figure into three groups of twenty-one fowls each, which are called the upper one-third, the medium one-third and the lower one-third respectively. Each figure shows three studies of egg production in the middle third the medium records and the third on the right of the figure, the lowest records, by that particular method of rating. In figure 3 the records of sixty-three fowls are divided by the horizontal line into three groups based on first year record and in figure 4, based on records of three years production. In the main the method of rating and dividing into upper, medium and lower groups shows that the fowls in each group generally have had a tendency to remain in the upper, medium or lower class by each of the eight methods of ratings. For further information about
against 95.55, a difference of 55.05; for the second year, 128.67 as against 111.81, a difference of 16.86 eggs; for the third year, 112.54 as against 99.00, a difference of 13.54 and for the three years combined, 391.81 as against 306.36, a difference of 85.45 in favor in each instance, of the earlier-to-lay pullets.

A poultry man selecting his pullets by means of trap nests or by external characters (discussed pages 481-484 Cornell Countryman, March, 1915), that began to lay before they were 8 months old, would not only have had a vastly higher flock average as indicated above, but he would have been able to discard, during the first year, about 25% of his flock, as low producing, and therefore, presumably unprofitable egg producers. Rigid culling of the flock has now become imperative on account of the abnormally high price of feed. It has also become quite essential in the light of our modern knowledge of breeding, if we are to breed from our highest producing individuals, with a view to increasing the productivity of our flocks. By this rigid culling of pullets the danger of breeding from the low producing individuals in later years would be largely eliminated. Incidentally the two fowls that did not lay until they were 476 and 1110 days old, respectively, would not have been boarded for two or more years just for the sake of their society.

In Table VII and Figures 3 and 4, the average production of fowls based on the age when first egg was laid is shown. The difference between the average production for three years of \( \frac{1}{2} \) of the flock that began to lay first as compared to the \( \frac{1}{2} \) of the flock that began to lay latest is 128.44 eggs as against 102.87 eggs, or a difference of 25.57.

2. EGG PRODUCTION TO MARCH 1ST.

If all the pullets had been hatched at the same time and at the right time in the spring so that a fixed date would have insured the pullets being compared on the same basis, the method would be quite reliable in picking out the less productive pullets. The fact that chickens usually are hatched at various times in the spring covering a period of from 6 to 8 or 10 weeks, makes the age of the pullets from 2 to 10 weeks different at March 1st, so that the method does not compare individuals on an equal basis. Hence, the method is less satisfactory than one in which an age limit is used by which the pullets are not compared until they have reached the same age.

By referring to Table VII and Figures 3 and 4 one will be able to compare the value of the 8 methods under consideration. In Table VII B, it will be seen that comparing the average production for three years group of \( \frac{1}{2} \) the highest producers selected on a basis of production to March 1st, as compared to \( \frac{1}{2} \) of the lowest producers at that time, is 141.03 as against 99.78, a difference of 41.25.

3. EGG PRODUCTION TO 10 MONTHS OF AGE.

The fact that a definite age limit is fixed by which the proficiency of fowls may be compared makes this a fairly safe and a quick method of eliminating the less desirable fowls from the flock, but is not sufficiently accurate in finding all of the medium and good layers to warrant one depending entirely upon it. The selection of pullets on account of their egg production to 8, 9 or 10 months of age, depending upon the breeding season, and other modifying or controlling influences is strongly to be recommended as one of the most important first steps in the development of a strain of high producing fowls.

Table VII and Figures 3 and 4 will furnish more detailed information as to the reliability of this as compared to the other methods of selection. A comparison of the average production for three years of \( \frac{1}{2} \) of the flock that laid the most eggs at 10 months of age as compared to the \( \frac{1}{2} \) that laid the least eggs shows a production of 142.07 as against 102.46, a difference of 40.51.
REMINISCENCES OF A FRUIT GROWER

BY B. J. CASE

I commenced farming in 1874 on my father’s farm of about one hundred acres. There were about 12 acres of apple orchard on it that had been set about 20 years. One orchard had four or five hundred peach trees in it that had been set about the same length of time. The balance of the farm was devoted to general farming.

Within a few years after I started, I opened a set of double entry books, the idea of which I had obtained from a book published for bookkeeping for farmers. I realized at that time the importance of knowing which crops were paying the best and which were not paying at all.

I was quite successful as a general farmer. Hardly ever did I get less than 30 bu. of wheat to the acre, and have had 40 bu. often; very seldom less than 30 bu. of barley per acre and have had 50 bu. Oats would run from 50 to 70 bu. per acre. From my books I proved, after a few years, that I could make $10 per acre on wheat and from $10 to $15 per acre on barley. Oats hardly ever went over $5 per acre. I never could make any money on corn. The apple orchard would show a net profit, one year with another, of from four to eight hundred dollars on the 12 acres.

We had quite a nice herd of cows and I took a lot of pride in my cattle; but, every year, when we balanced up our books, the cows would show a loss, until, thinking that the cows must be made to pay. The manure coming from the stock I thought I must have for my fruit growing, so I went into Jefferson County and secured a man and his family for one of my tenant houses. The man was an exceptionally good man to take care of stock and his wife was a splendid butter maker. I then went to Rochester and found a market for my butter so that I received 30 cents per lb. nearly the year around, only a short time in the summer getting 25 cents per lb. I made every crop that took any manure out of the barnyard pay $2 per load for it as it lay in the barnyard. The loads were not large ones as we would draw from town, but what were called dump-board loads. Now I was sure I could make those cows pay. Greatly to my surprise when I came to take off my inventory and trial balance I found that I had not made a cent. This so discouraged me in the dairy business that I sold the entire herd, but two, to the first drover that I could get hold of. One cow I would not sell and the other I could not. The drover would not buy her.

I have given this experience to show how general farming was carried on in a thorough, business-like way during the 70’s and the 80’s. But during the 80’s I still thought that I must have manure for my fruit. Several times I went to Buffalo and bought carloads of steers, and fed them through the winter, and sold them fat in the spring. Twice I bought carloads of sheep, and carried them through the winter always being successful in making a little money, except for one year when one flock of sheep lost money.

I imagine that this would fairly illustrate the profits of general farming throughout New York State up to about 1900. Since that time, while I have not been in the business of general farming, I believe a good thorough man could make much more money with stock than any one would have been able to make in the earlier years. Stock of all kinds is high, and I believe is going to be higher on an average. The immense tracts of government land throughout the west, and the large number of acres that have been bought by land speculators, most of which has been used for feeding stock, are being broken up and sold for general farming, together with the in-
creased population of our country, makes me believe that meats of all kinds are going to be a good paying proposition.

Fruit growing has developed wonderfully in the last twenty years. Whether it will pay as well as it has paid is a great question in my mind. The time when any one could set out an apple orchard and go back in 12 or 15 years and gather the fruit is past. The increase of insects and diseases that attack all of our fruits, each insect attacking the fruit for which it seems to have an affinity, requires constant vigilance on the part of the grower to check. It does seem that as quickly as we find a remedy for any insect or any disease and think that we can control the different enemies of the fruit trees, some new insect or perhaps an old one, becomes so numerous that it is a pest. Take for instance the different families of the aphis. The first time I ever saw them or had known them to do any damage was in 1882 when they certainly hurt our apple crop as we did not know what to do for them. Today I consider them the worst pest that is attacking the apple orchards through western New York. Now we are looking for someone to discover a way of killing the aphis on our trees, yet not killing the predaceous insects which are feeding on them. Teats Brothers, of Williamson, this last year were the most successful in killing the aphis of any one that I know. They discovered that a heavy pressure of 225 to 250 lbs. should be used and that the pole or nozzle must be held close to the leaves and from the inside of the tree, so that the force would open up the leaves and not close them where the aphis had curled the leaves.

The San Jose scale commenced to spread through the State in about 1900. This is about the first that we know of it. Today we do not fear it, as any fruit grower who is thorough can keep his fruit clean from San Jose scale. The codling moth has proba-

FOUR YEAR OLD CHERRY ORCHARD ON THE CASE FARM.
much. Either blue vitriol or lime and sulphur will control it but it has been my experience that peach trees can be sprayed fully one week later with lime and sulphur than they can be with Bordeaux to control leaf curl.

It is a great question whether it is best for the young man who today starts out to follow farming in any of its branches, to make a specialty of one or two things or not put his eggs all in one basket, but take a number of things. I know that when I started fruit growing, I had the idea of not having my eggs all in one basket so I grew all kinds of fruit that were native to this climate, but now I wonder if I have done as well as some of the fruit growers who made a specialty of peaches, or of apples or of grapes or of pears. One thing I found I was up against was to undertake to have all my fruits compare favorably with the growers who were only devoting themselves to specialties. This has required an immense amount of technical information as every variety of the different kinds of fruits has its characteristics differing from nearly every other variety. The kind of treatment that will bring good results for a King apple tree will not do at all for a Wealthy. The kind of trimming for an Elberta peach tree will not answer when we come to trim a Carman. The kind of trimming for a Spy apple tree will not hold good when we are trimming a Greening apple tree. The habits of growth, fruiting and its natural resistance to fungus diseases have to be considered in every variety if we wish to be anywhere near the head of the column.

Another thing the man who is in the fruit growing business today realizes is that when his fruit is packed ready for market he has only solved one half of his problem. Fully one half of the fruit growers' problem is to find a market for his fruit after it is ready to be marketed. And unless he develops into a good salesman, some of his finest products will never find a market at satisfactory prices. This is also true of diversified farming. The farmer must be able to know markets, must be able to form an opinion as to the total output of his country in anything he has to sell, if he is able to sell at the right time to draw the long prices. I thoroughly believe that the young man who goes into farming in any of its branches must like the business. He must make a study—and enjoy the study—of the characteristics of the different crops that he undertakes to grow.

(Continued on page 608.)
THE MIDDLEMAN, AN EDUCATIONAL FACTOR IN THE IMPROVEMENT OF THE QUALITY OF EGGS

BY C. J. CHANDLER

(Editor’s Note—Mr. Chandler is carrying on excellent work in Michigan, Ohio and Indiana, instructing the farmers how to produce better poultry products.)

THERE is a great deal being said these days about getting the producer and consumer together and thereby eliminating the middleman. We presume those who advocate this have studied producing and marketing conditions and feel sure that the middleman is a menace to the interests of the mass of producers and consumers, and, in due time, they will enlighten us as to how that much desired condition can be reached.

There are middlemen now and just so far as they continue to make themselves useful to society, they will remain.

This article will deal with the work now being done by some middlemen in the enlightenment of the producers of eggs and poultry, and the writer is one who sees great opportunities for promoting educational work through them.

The middleman is a specialist in his line and if not the greatest, is certainly one of the greatest of all the educational factors in connection with the producing or marketing of any article, but this is particularly true in the production and marketing of farm products. Who can do a better job in the distribution of knowledge to the farmer than the individual that comes into personal relation with him every week in the year, and is it not equally true that no one can better look after the requirements of the consumer than he who has close contact with him? It is too much to expect that one man can do both jobs.

It is appalling to those of us who have been actively engaged in the business to see how little the general public knows of the obstacles in the way of the consumer getting satisfactory eggs direct from the producer in the country. When we say producer, we mean the producer on the farms, not those professional producers located within a short distance of a city.

The average quality of the average farmer’s product has been, and is now, to a large extent too poor to satisfy discriminating consumers. The farmer has not been alone to blame for this condition, in fact, the blame, if placed where it belongs, would be found in the old established methods of buying and that is only another way of saying that the blame is the dealer’s for not getting away from those old methods sooner. It has taken a good many years for the egg dealer to see that the quality would not be improved as long as the country store keeper was his agent for collecting the eggs, but some of the most progressive ones are getting away from that and are establishing quality buying stations in country districts where cash is paid for the product on an absolutely fair basis as the station has nothing to sell to the farmer.

It will be readily seen that while the collection of eggs through the country merchant is the cheapest method, as the latter is content to make the profit on the goods he sells to the farmer and turn the eggs over to the shipper at the price he paid for them, and sometimes for a less price, this method is one of the greatest enemies to quality, for the merchant would take any kind of eggs rather than offend a customer. It is as good business on the part of the country merchant to induce customers to come
to his store by paying good prices for eggs without rejecting any, as it is for the city merchant to buy advertising in the newspapers. It is all so very natural, that it is almost impossible to change the course.

So we repeat, that for years the system of buying was to blame for the poor average quality. There was no incentive for careful methods on the part of the farmer as long as the buyer did not inspect the eggs and pay according to the quality. The farmer had nice newlaid eggs, large and clean, accepted the same price as his neighbors obtained for small, dirty and stale eggs. An egg was an egg you know, and the only thing that distinguished it from other things was its shell. It was believed by every-one that you had to take your chances for there was no way of knowing what the shell contained until you opened it. Things have changed since those days, but progress is made slowly.

It ought not to be any longer necessary for one to take chances on the quality of eggs if they are purchased from an egg dealer, for in the past few years they have become competent of judging the exact condition of the eggs. The work of candling has become quite expert. There is a popular belief that if any one could get the eggs direct from the farm, they would not need candling. On the other hand, government reports show that the greatest waste or deterioration occurs before they leave the farm. If it were simply a matter of removing the bad eggs from the good ones, the process would be simple, but when you have done that, you have not touched the expert side at all, for like the famous pickles, there are 57 varieties of edible eggs. The middleman then must do a great deal more educational work at the source of supply before any large number of consumers can rely upon buying direct from the farmer, and in the end, the reward for the middleman may be the loss of his customers, however, we know some who are taking a leading part in this kind of thing who feel that it is like other missionary work and the satisfaction will be in having rendered a public service.

The field with which the writer is familiar is in Michigan, Ohio and Indiana, and it might be interesting to our readers to know what is being done there.

One organization has quite a large number of buying stations located in small country towns. It puts an expert egg candler in each of the stations and buys eggs absolutely on a quality basis. They make the following grades:

*Extras:* A large clean newlaid egg with good strong body, free from heat,
for which a premium of several cents per dozen is paid.

Firsts: An egg that is not quite nice enough for an Extra, but too good to be classified as a second. It must be fresh laid and of medium size and may show a small air space or may be slightly dirty. This grade must not contain very small, very dirty or stale eggs. The price paid how, that there was no decided improvement in the quality of the eggs, only in a few exceptional cases, and the returns to the farmers on this basis were disappointing and unsatisfactory. This at once created a demand for education.

While the men at the buying stations were experts in candling, they knew practically nothing as to

THE WORK WHICH THE MIDDLEMEN ARE DOING TO IMPROVE THE QUALITY OF EGGS HAS SHOWN THAT THE MOST MARKED RESULTS CAN BE OBTAINED BY PERSONAL VISITS OF AN EXPERT. THIS MAN IS TALKING WITH THE FARMER AND SUGGESTING NEW METHODS, AND SHOWING THE FARMER THAT THE ADOPTION OF THESE NEW METHODS WILL PAY HIM FINANCIALLY.

for this grade is the same as competitors pay for straight run eggs.

Seconds: All edible eggs not good enough for either of the above grades, and includes all small or stale eggs, and eggs with dirty shells, for which is paid a lower price, governed by the value of this kind of eggs in the market.

Checks: All eggs having checked shells, not leaking, and bring about the same price as the seconds.

The inedible eggs are rejected as worthless.

It was at first thought by adopting this system of buying that all the former difficulties would be overcome, but it was soon discovered that while this method gave the farmers an incentive for doing the best they knew how to tell the farmers to improve the conditions, and the most natural place then to look for the desired information was the Agricultural Colleges. A correspondence was opened with the instructors at Cornell, Purdue and the Michigan Agricultural Colleges, with the result that each sent out some of their men and the whole field operated by the above named buying organization was covered, and the farmers were given all possible information as to how they could produce and care for eggs so the top price could be reached.

The manager of the business and one of the Cornell men visited all the villages in the district, giving stereoptican talks. The pictures were mostly borrowed from the U. S. Agri-
cultural Department and Cornell University, but gradually they picked up illustrations in the field, and now have a good collection of lantern slides of their own. The greater efficiency, however, was obtained by sending field men from farm to farm to interest and inform the farmer as to best methods. They met with a great many obstacles, among which were:

1. Poor breeds, mostly mongrels.
2. Poor housing.
3. Improper feeding, generally no summer feeding.
4. Production of fertile eggs.
5. Eggs not cooled in warm weather.

They are being taught now that breeding, feeding and housing are very important. Some farmers bring their eggs in two or three times per week and while they are known to be fresh, they are poor in quality. Some are better made than others. Some are weak in body and deteriorate more rapidly than others. These things are certainly dependant upon breeding and feeding.

It is urged that the farmers keep pure bred poultry and further, that in any given vicinity they would do well to produce the same breeds, thereby helping each other to gain a reputation for all. In this matter, it is found that at present there is very little cooperation. The farmers have been keeping principally mongrel breeds. They think mongrels produce more eggs and are less care than pure breeds, and under the old system of buying, quantity instead of quality, their profit was greater. They are now learning that the consumers in one section are willing to pay an extra price for eggs with brown shells, and another section will pay an extra price for eggs with white shells, and that it pays better to produce what the consumer desires. The mongrels produce shades of color between the brown and white and these are not wanted by the most exacting buyers. The knowledge of this fact will lead them into keeping pure bred poultry. They are also taught how to select eggs for incubation, that like begets like, consequently if they select large, good shaped eggs, the pullets from these eggs will lay large, good shaped eggs. This is further emphasized in discussing constitutional vigor.

Probably the greatest obstacle in the way of quality is the production of fertile eggs in the summer time. The government estimates the waste from this source to be about 45 million dollars per annum. Here seems to be a chance for the country egg men to distinguish themselves by showing the farmer how this great waste can be prevented. It looks easy. All that is needed is to shut up, or sell, all male birds after the hatching season is over, but it is not as easy as it looks to be, for you have to convince the man who owns the poultry, and thus far, he has been hard to convince and in a majority of instances, he continues to keep the male birds with the flock. It looks now as though the present generation of farmers would have to pass away before this enemy of quality eggs is destroyed.

The gathering and care of eggs is another important factor and especially during the hot weather. When the egg is laid, it contains animal heat and should be promptly cooled out. This is some task on the farm when the temperature is 75 degrees and upwards, but the field man assists him in finding a cool, dry, clean place, or the best available place, and as soon as the eggs are gathered they are put there until they are taken to the buying station, and it is recommended that they be gathered twice daily and marketed twice weekly to obtain best results. In late fall and winter, the difficulty is that they are kept where the temperatures are too changeable. In the first place, they get very cold, possibly chilled in the nest before gathering, then possibly they are kept in the pantry, the entrance of which is close to the kitchen stove, where the temperature may be 80 to 90 degrees while cooking the meals, and at night the fire goes out and the eggs nearly freeze. These sudden changes

(Continued on page 598.)
THE SOILS AND AGRICULTURE OF THE SOUTHERN NEW YORK HIGHLAND REGION

Article No. 5

BY ELMER O. FIPPIN

Professor of Soil Technology, New York State College of Agriculture at Cornell University

Editor's Note.—This is the fifth of a series of articles dealing with the Agriculture of New York State.

THE southern New York highland region is the largest and most uniform agricultural division of the State. It includes part or all of twenty-seven counties and has an area of approximately 15,000 square miles or about one third of the land area of the state. It extends from the western boundary eastward to the Hudson valley low lands.

On the north side it reaches beyond the middle of that portion of the state south of the great lakes and is bounded approximately by the one thousand foot contours of elevation. It takes in the plateau region and the Catskill mountains and is the northern extremity of the Cumberland plateau that extends southward into Alabama along the western flank of the Allegheny Mountains.

Topography and drainage. The topography is strongly hilly to mountainous throughout. The elevation of the highest hills ranges from 2200 feet in the western half to about 4500 feet in the eastern half in the Catskill Mountains. The mountain region is included because structurally it is the same as the plateau region. In general, the land in the highland region rises from the north toward the south and from the west toward the east. In the middle in the finger lakes region is a broad shallow sag or syncline trough, where the maximum elevations are three or four hundred feet lower than on either side.

The two most rough portions of the region are the Catskill Mountains in the eastern tenth and the small non-glaciated region in southern Cattaraugus county. Outside of these, the hills, with the exception of a few of the lower interior slopes mentioned above, are freely navigated by modern tillage implements. Toward the tops the slopes are usually very gentle. However, level areas of important extent are almost entirely absent.

The drainage flows to both the north and the south. This is a notable water-shed region and several well-known rivers rise in the territory. The course of many of the streams is peculiar and interesting. The important rivers are the Delaware and
Susquehanna in the eastern half that rise very near each other in the vicinity of Delaware county and flow southward, and the Genesee river in the western half that rises near the Pennsylvania line and flows northward to Lake Ontario. In addition the Allegheny river makes a great loop into the state in the southwest portion in Cattaraugus county and roughly bounds the unglaciated part of the area.

Two notable facts in the topography and drainage should be kept in mind to aid in interpreting agricultural conditions. First, the existence of through or continuous valleys whose floors range in elevation from 300 to 1200 feet, and are, therefore, the natural lines of travel and communication. Second, the usually rather sharp rise from the bottom of the valleys to the first shoulder of the hill land three or four hundred feet above.

As a result of these conditions the railroads are almost entirely in the valleys and the important cities are situated there. The villages and settlements located in the higher or side valleys and on the hills have generally ceased to develop or have retrograded as a result of competition with those towns on railroads. The shipping stations are necessarily in the valleys. The wagon roads which generally have a fair surface are frequently quite steep for the first two or three miles from the station so that hauling supplies to interior farms is quite expensive. In recent years the construction of state-aided highways has much reduced the grades of main lines and improved the surface, thereby much facilitating local transportation. It should be noted, however, that these state highways, like the rail-ways, cling tenaciously to the main valleys, and the interior areas not on trunk lines are only provided with natural surface roads graded for drainage.

**Climate.** As a result of the range in topography there is large local variation in climate, both general and seasonal. Some of these features have been pointed out in Dr. Wilson's article in the November COUNTRY-MAN. In general, the valleys are subject to late and early frosts. The hills have a much shorter average growing season than the valleys and a much lower mean temperature. Numerous local variations in climate occur that have not yet been adequately investigated but which have an important bearing on agricultural development. The difference between the climate at Ithaca and Perry City, both in the same county, where the difference in growing season is considerable, illustrates this range between near points. It may make important differences in crop adaptation.

**General character of soil.** The greater part of the soils of the region belong to two main groups. First, Glacial soils. As pointed out in preceding articles in this series, the entire region with the exception of the loop of country south of the Allegheny river has been over-run by glacial ice. The basal blanket of soil is, therefore, glacial in nature. It is a rather heavy silty to clay loam, containing considerable stone. Second, water-deposited soils. The drainage coincident with the retreat of the glacial ice was naturally southward through the valleys. The fact that the floor of many of these sloped northward or had a divide in their course caused much pounding of water between the ice and the divide and promoted the construction of great plains of outwash gravel, sand and silt which upon being subsequently eroded has formed extensive lines of benches or terraces of those materials in all the valleys near the foot of the hills and above the present first bottom. These two divisions of soil, the glacial and the water deposited material dominate the agriculture of the region.

Two sets of conditions make the main distinctions in soil. These are, first, the mode of formation which for the area in question has just been pointed out. The second is the kinds of rock that entered into the soil. The prevailing rock from which the
soil is formed is shale and sandstone with some limestone on the northern side that has been worked into the deeper subsoil. Theseshales and sandstones are prevailingly fine grained, chiefly silt and sand. The cap of the Catskill region is a pebbly formation. The color is prevailing gray and black except in a limited area in the eastern half where a red shale occurs. (See October number, p. 22.) In the main, Glacial Till Soils. The contrast between the agricultural conditions of the unglaciated and the glaciated region well illustrates the great agricultural benefit of that experience. It ground up the rock to make new soil, brought in material from other regions, planed down some of the smaller eminences and filled in many hollows. Very seldom did it obliterate rock valleys especially the north-south

the rocks are low in lime. The prevailing larger amount of lime in the subsoil is probably due to the derivation of material from further north as well as to leaching from the upper soil.

The DeKalb Series. The unglaciated region is unimportant agriculturally. Only a small part of the land is cleared and in cultivation. The DeKalb Series of soil prevails, chiefly the clay loam and is a thin, stony, light yellow, soil low in lime. At present it bears a sparse growth of pine, hemlock and hardwood trees and brush. ones. But it partly filled in many depressions, especially those with an east-west course, leaving a gently sagging trough. Often the course of the streams was locally changed and led to new cut gorges in the rock, thus giving rise to many picturesque gorges and waterfalls, also well illustrated near Ithaca.

As a large part of the rock material was deposited from beneath the ice it was much compacted by the weight of material. Consequently the subsoil below two or three feet is generally

SECTION OF SOIL IN RAILROAD CUT, HAINES CORNERS, CATSKILL MOUNTAINS. DARK RED SANDY AND STONY LOAMS.
very compact. Being derived locally
the rock is generally flat shale and
sandstone. This varies much in
abundance in the soil. As a rule,
there is not enough to interfere seri-
ously with cultivation though it has
given rise to many miles of stone
fences made of these stones picked
from the field.

The Culver Series. In the Catskill
region where the rocks are hardest
and most sandy and the elevation
greatest, the soil is relatively thin,
stony and sandy. Its color is a rusty
color to reddish cast. So far as known
the Culvers series of soil is there dom-
inant. There is less development of

The Volusia Series. Outside of the
Catskill region the dominant series of
glacial soil is the Volusia. It covers
the entire hill portion with the excep-
tion of two series that have a local
development. These latter are (a)
Lackawanna series that owes its char-
acter to its derivation from dark
Indian red shale and sandstone rock
and, therefore, has a dark red color.
(b) The Wooster series which is
closely associated with the Volusia
and owes its distinctive character to
the occurrence of terminal moraine
bands.

The Volusia series of soils is char-
acterized as a rather thin mantle of

The Volusia Silt Loam.
TYPE OF SOIL IN CATTARAUGUS COUNTY.

VOLUSIA SILT LOAM.
TYPE OF SOIL IN CATTARAUGUS COUNTY.

the compact subsoil in this series than
in the succeeding glacially formed
series. The prevailing rock is sand-
stone and boulders of rather large size
are common. In some of the valleys
where much filling has occurred there
is occasionally a small well developed
farm community but the steep slopes,
small areas and deficiency in lime and
humus, together with poor transporta-
tion have combined to produce a low
state of agricultural development.
The chief crop of the region is “sum-
mer boarders” as the topography and
climate encourage that practice.
While producing a certain type of
local market they are very demoraliz-
ing to agricultural progress. The
Jewish people are coming into this and
adjacent regions in large numbers.

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Jewish people are coming into this and
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from small pebbles to flat sheets a foot or more in diameter, are a constant feature of these soils. Toward the northern side and on the lower slopes some foreign boulders of a different kind are frequently found.

The soil is derived almost entirely from the gray and black shales and sandstones of the region. It is low in lime carbonate, especially on the higher hills where the soil is thinnest. The color is a light shade of yellow or brown, modified by humus at the surface to a gray or dark color, and in the upper subsoil to a mottle of rusty brown, yellow and gray colors, due to defective drainage and aeration. Below a depth of five to seven feet the subsoil is frequently a slaty blue color due to protection from oxidation.

Six types have been recognized in the Volusia series which takes its name from a postoffice in Chautauqua county where such material was first recognized by the soil survey. These are the silt loam, loam, clay loam, shale loam, stony loam and gravelly loam in the order of their extent and agricultural importance.

The silt loam which is by far the most extensive type occupies the higher slopes and the more southerly position in the region. It is also the most shallow type and its surface conforms most closely to the underlying rock.

The Volusia silt loam has a light to dark yellow or brown silt loam soil moderately stony. Beneath, to a depth of fifteen to thirty inches is a light colored material of some texture and beneath that is a mottled yellow and brown compact stony subsoil. It is characterized as hardpan land. Because of the compact subsoil, drainage is defective, irrespective of the surface slope, and temporary local springs are common. Lime carbonate is particularly deficient and the humus content is low. Legumes, especially clover, do not thrive naturally, although in earlier times when the soil was new, clover grew luxuriantly. Bluegrass is of uncertain growth and on the old fields is absent, being sup-

planted by a very sparse growth of weeds and "poverty grass." (*Danthonia spicata.*)

Due to climate and soil conditions, the chief crops are oats, buckwheat, potatoes and timothy. The last is short-lived.

A large proportion of the land, 80 to 90 per cent, is grass and timber, the latter usually on the steeper slopes.

This type is especially identified with less intensive farm practice than formerly prevailed and the character of farm buildings points to a former period of greater prosperity.

The Volusia loam is a distinctly better soil than the silt loam and is more common on the northern side of the region. It has a lower elevation and more undulating surface, a greater depth, a less compact subsoil, coarser texture, better lime content, and usually better humus content. While the deeper subsoil is compact, it is less a hardpan than in the silt loam. Streaks of sandy nature give better circulation for water and air. Much drainage is needed, especially for wet pockets.

Clover, bluegrass and timothy grow better than on the silt loam. Corn and wheat are more successful and oats and buckwheat give good yields. Beans are grown on the northern margin of the type and the production of cabbage extends over the type boundary.

Many prosperous farms are located on this soil.

The Volusia clay loam is closely identified with the silt loam, being due probably to the finer grained nature of the rock of which it was formed.

The shale, stony and gravelly loam, all have a small development and usually flank steep slopes. They may form ridges running over the lower hills.

No special discussion of these latter types need be given here further than to point out that in crop relations and agricultural value they lie between the loam and the silt types.

The shale and gravelly loam are
frequently so situated as to be favorable for fruit production.

_The Lackawanna series._ The Lackawanna series which owes its dominant character to its derivation from red shale and sandstone occurs in northern Delaware county and extends over the boundary of adjacent counties. There is also a small area of the same soil in central Sullivan county around Liberty. Outside of the color the types of this series are very similar in character to corresponding members of the Volusia series.

Since no detailed surveys have been made in the region of its occurrence, full knowledge of the types is not available. Three prevailing types probably occur: the silt loam, loam, and shale or gravelly loam. The first of these is most abundant. The types work slightly heavier than the corresponding yellow soils of the Volusia.

There is the same tendency to develop a hardpan subsoil and poor drainage correlated with it. Lime carbonate is deficient and the humus content is low. Flat rock of red color like those from which the soil is derived is common. Oats, buckwheat, hay and corn for silage are prevailing crops. Clover is grown with difficulty. Bluegrass has a limited place. Potatoes are not much grown.

As a whole the Lackawanna series is perhaps a little more prosperous than the Volusia series. The range in conditions is not so great. Its location with reference to markets has favored dairying and many prosperous farms have been developed.

_The Wooster Series._ The Wooster series of soils which has not been extensively studied, represents the material deposited at the margin of the ice, during its retreat, in the form of terminal hillocks, mounds and ridges of loamy, sandy and gravelly material. It lies in disconnected hands across the state associated with the morain bands shown in the map with Professor Von Engel's article in the October Countryman. It is well developed in central Chautauqua county and northwestern Wyoming county. Northern Allegany and Steuben counties have such material and parts of Chenango and adjacent counties are so correlated. The elevation is moderate—twelve hundred to eighteen hundred feet.

The material is yellow to brown in color derived from shale and sandstone with perhaps a considerable addition from the more calcareous formations to the northward. The series generally had a greater depth of material than the Volusia series—in fact overlies it. There is a local stratification in the subsoil and absence of hardpan condition. In parts the soil is quite gravelly, but as a rule the types of this series are not excessively stony. Foreign boulders of roundish shape are common in some parts.

Grain and hay crops are successfully produced. Potatoes and buckwheat are especially prominent in the region of Steuben county. In Chautauqua county, tree fruit production has some prominence. It is generally a region of fair to good farms. The detailed unevenness of the surface is some hindrance to tillage.

_Valley Terrace Soils._ The valley soils laid down by flowing water belong in two groups, (a) The old glacial stream terraces, and (b) the recent first bottoms of the present streams. The existence of ancient high level lakes and drainage channels has been noted. The gravel, sand and silt plains laid down at that time have subsequently been cut into the form of benches with a rather steep slope toward the stream. The soils of a yellow-brown color are classified in the Chenango series, which is associated with the Volusia and Wooster soils of the upland and from which they have been largely derived. In the region of the Lackawanna series there are reddish colored terraces known as Tunkhannock. Otherwise, all these terrace soils are very much alike. They are predominately gravelly and sandy. The usual arrangement is a surface formation of silt loam under-
lain by sand or gravel. The depth of the fine surface apterial ranges from one to three feet. Where it is shallow much gravel is interspersed, and a gravelly loam soil is produced. If the gravel is very clean and free from loam the gravelly sand is produced, and owing to its dry nature has a very low agricultural value. The gravelly loam has a much better moisture relation and corresponding crop value. It is also the more common of the two classes. The sandy soils have a similar variation. When clean they are porous and dry. When loamy they form splendid sandy loam soils of high agricultural value. Sometimes, large, rather slow-moving streams produce deep deposits of silt loam which some-textured members are somewhat uncertain in dry years. Lime carbonate is generally deficient, especially in the coarse soils where leaching has been most active. Drainage is generally good except at the base of steep slopes where water seeps out of the higher formation.

Hay, small grains, corn, potatoes and tobacco are all extensively produced. Small fruits are also grown in a limited way, and tree fruits have a place in some sections. Tobacco was formerly an important crop in the valleys in the middle part of the area, namely near Elmira and Binghamton. Clover grows fairly well, and when lime is applied alfalfa can be extensively grown.

In the valleys toward the north-central margin, cabbage and beans are produced. The region of Cortland best exemplifies the production of those crops.

Farms are seldom confined to these old terraces but run across the valley from the upland glacial soil to the first bottom land along the streams.

First bottom soils. The first bottom soils along the stream represent recent deposits by the overflow of these streams. They are nearly all in the Genesee series, the name being taken from the bottoms along the river of that name which are a mile or more in

(Continued on page 600.)
MEAT SUBSTITUTES

THERE are many reasons why the housekeeper is interested in meat substitutes. Woman is playing a greater part in the economic world than ever before. She is considered in many ways one of chief spenders of money. It is she who decides the standard of living of the family. She has found that the money spent for food constitutes at least thirty percent of her total expenditures, and that this percentage has been constantly increasing. She has discovered that a great deal of this money has been spent for meat. Since the price of meat has become so high, however, the housewife has begun to look about for something to take its place. She has found upon investigation there are many foods which will take the place of meat. These foods are popularly called "meat substitutes."

A meat substitute is a food which will supply the same main constituents as meat; namely, protein and fat. Since in the average family dietary, meat supplies about 30% of the total protein (the tissue building food) and about 59% of the total fat (one source of heat and energy), it is clear that any food or combination of foods to be used as a substitute for meat should contain a fair percentage of both protein and fat. Eggs, milk, nuts, legumes, cereals and cheese all contain a relatively large amount of protein. Eggs, milk, nuts and cheese are also comparatively rich in fat.

The following table in part from Farmers' Bulletin No. 121, entitled "Beans, Peas, and other Legumes as Food" shows the nutrients furnished for ten cents in legumes and other food materials.

It is clear from the above table that eggs, milk, nuts, cereals, cheese, and legumes furnish as much, if not more, protein and energy for a given amount of money than the meats. The legumes and cereals furnish more energy and protein for a pound than any of the other mentioned foods. The protein in cereals, nuts and legumes is in such form that it is not as available to the human body as the protein in eggs, milk and cheese. For this reason the cereals, nuts and legumes should be combined with

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney beans, dried</td>
<td>5</td>
<td>2.00</td>
<td>0.45</td>
<td>0.04</td>
<td>1.19</td>
<td>3,210</td>
</tr>
<tr>
<td>Lime beans, dried</td>
<td>4</td>
<td>2.50</td>
<td>0.45</td>
<td>0.04</td>
<td>1.65</td>
<td>4,065</td>
</tr>
<tr>
<td>Baked beans, canned</td>
<td>3</td>
<td>3.33</td>
<td>0.23</td>
<td>0.06</td>
<td>0.05</td>
<td>2,000</td>
</tr>
<tr>
<td>Peas, canned</td>
<td>5</td>
<td>2.00</td>
<td>0.07</td>
<td></td>
<td></td>
<td>510</td>
</tr>
<tr>
<td>Cow peas, dried</td>
<td>2</td>
<td>5.00</td>
<td>1.07</td>
<td>0.07</td>
<td>3.04</td>
<td>7,950</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>2</td>
<td>5.00</td>
<td>0.57</td>
<td>0.15</td>
<td>3.76</td>
<td>8,250</td>
</tr>
<tr>
<td>Wheat bread</td>
<td>3</td>
<td>3.33</td>
<td>0.31</td>
<td>0.04</td>
<td>1.77</td>
<td>4,045</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>3</td>
<td>3.33</td>
<td>0.44</td>
<td>0.24</td>
<td>2.25</td>
<td>6,195</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1</td>
<td>10.00</td>
<td>0.13</td>
<td>0.08</td>
<td>1.47</td>
<td>3,100</td>
</tr>
<tr>
<td>Rice</td>
<td>6</td>
<td>1.67</td>
<td>0.13</td>
<td>0.07</td>
<td>1.32</td>
<td>2,720</td>
</tr>
<tr>
<td>Beef round</td>
<td>16</td>
<td>.63</td>
<td>.12</td>
<td>.08</td>
<td></td>
<td>565</td>
</tr>
<tr>
<td>Ham, smoked</td>
<td>22</td>
<td>.46</td>
<td>.07</td>
<td>.15</td>
<td></td>
<td>775</td>
</tr>
<tr>
<td>Eggs, 35c. doz.</td>
<td>23.3</td>
<td>.43</td>
<td>.11</td>
<td>0.13</td>
<td>.19</td>
<td>1,080</td>
</tr>
<tr>
<td>Eggs, 25c. doz.</td>
<td>16.7</td>
<td>.60</td>
<td>.08</td>
<td>0.05</td>
<td>.20</td>
<td>815</td>
</tr>
<tr>
<td>Milk, 6c. qt.</td>
<td>3</td>
<td>3.33</td>
<td>.11</td>
<td>0.13</td>
<td>.17</td>
<td>815</td>
</tr>
<tr>
<td>Milk, 8c. qt.</td>
<td>4</td>
<td>2.50</td>
<td>.08</td>
<td>0.10</td>
<td>.13</td>
<td>815</td>
</tr>
<tr>
<td>Cheese, whole milk</td>
<td>16</td>
<td>.63</td>
<td>.16</td>
<td>.21</td>
<td>.02</td>
<td>1,230</td>
</tr>
</tbody>
</table>
eggs, milk and cheese to form foods more easily and more completely assimilated by the body. The question naturally arises, how can the above materials best be combined with other foods to make them both attractive and palatable. The family have so long been accustomed to meat that it takes considerable skill to create a meat substitute which will be as attractive to the eye and as pleasing to the taste as meat.

The following are a few meat substitute dishes:

1. Eggs in all forms, such as poached eggs, creamed eggs, omelets, soufflé, egg salads.
2. Cheese, which is usually combined with other foods to give the necessary bulk, as in cheese fondu, rice and cheese croquettes, macaroni and cheese, baked rice and cheese.

Cheese, especially cheese which is not well ripened has long been considered difficult to digest. It has been shown by experiments that new and old cheese are equally easy to digest, and that the digestibility depends upon the thoroughness with which the cheese is broken down into small particles. For this reason it is usually combined with other less concentrated food. When eaten alone, cheese, in order to insure its easy digestion, should be thoroughly masticated.

3. Milk, is often served with other protein foods such as bread, cereals and eggs or combined with them to form puddings. Other ways to introduce milk into the diet are to use it in making cream soups and cream sauces to be served with vegetables.

4. Nuts, which are served either alone or cooked with vegetables and cereals in the form of nut loaves, nut croquettes and the like.

5. Legumes, except peanuts, are sometimes combined with salt pork to supply the fat and additional flavor, as in baked beans, kidney beans and lentils. Other popular ways of serving legumes are bean croquettes, bean salads, bean pureés, creamed peas and beans.

Although most authorities do not advocate total abstinence from meat for the normal person, it has been shown to be advantageous from the standpoints of both health and economy to restrict the amount of meat used. A more liberal use of meat substitutes will add to the variety of the dietary and at the same time reduce the cost of both protein and fat.

Below are the recipes for several meat substitutes.

**BEAN SALAD**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Amount</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked Beans</td>
<td>4 cups</td>
<td>$0.16</td>
</tr>
<tr>
<td>Sliced tomato or pickles</td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>Curly lettuce</td>
<td>2 heads</td>
<td>0.04</td>
</tr>
<tr>
<td>Mayonnaise</td>
<td>8 tblsps</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Total: $0.31

Number of servings 8.

**SPLIT PEA SOUP**

*(Fanny Farmer's Cook Book)*

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Amount</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split peas</td>
<td>1 cup</td>
<td>$0.04</td>
</tr>
<tr>
<td>Cold water</td>
<td>$2 1/2 cups</td>
<td>0.35</td>
</tr>
<tr>
<td>Milk</td>
<td>1 pint</td>
<td>0.035</td>
</tr>
<tr>
<td>Butter</td>
<td>3 tblsps</td>
<td>0.03</td>
</tr>
<tr>
<td>Flour</td>
<td>2 tblsps</td>
<td>0.005</td>
</tr>
<tr>
<td>Seasoning, onion, salt, pepper, salt pork</td>
<td></td>
<td>0.02</td>
</tr>
</tbody>
</table>

Total: $0.10

Number of servings 4-6.

**RICE AND CHEESE CROQUETS**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Amount</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>1/2 lb</td>
<td>$0.01</td>
</tr>
<tr>
<td>Butter</td>
<td>1/2 lb</td>
<td>0.047</td>
</tr>
<tr>
<td>Flour</td>
<td>1/2 lb</td>
<td>0.005</td>
</tr>
<tr>
<td>Tomato Purée</td>
<td>1 cup</td>
<td>0.04</td>
</tr>
<tr>
<td>Cheese</td>
<td>1/4 lb</td>
<td>0.05</td>
</tr>
<tr>
<td>Eggs</td>
<td>2</td>
<td>0.05</td>
</tr>
<tr>
<td>Green pepper</td>
<td>1</td>
<td>0.01</td>
</tr>
<tr>
<td>Fat</td>
<td></td>
<td>0.01</td>
</tr>
</tbody>
</table>

Total: $0.232

Number of servings 12.

**PEANUT LOAF**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Amount</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooked rice</td>
<td>1 cup</td>
<td>$0.013</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>1/2 cup</td>
<td>0.04</td>
</tr>
<tr>
<td>Milk</td>
<td>1/2 cup</td>
<td>0.01</td>
</tr>
<tr>
<td>Eggs</td>
<td>1</td>
<td>0.025</td>
</tr>
<tr>
<td>Seasoning</td>
<td></td>
<td>0.01</td>
</tr>
</tbody>
</table>

Total: $0.098

Number of servings 8.
EARLY DAYS IN THE HISTORY OF THE COUNTRYMAN

BY E. L. D. SEYMOUR
Editor of the Countryman, 1908-9

So THE COUNTRYMAN is to have—has already, in fact—a new office, and not only a room, but actually an entire building to itself! Surely that spells growth, importance and prosperity undreamed of by the Boards to which I was privileged to belong. When, during Farmers' Week, I heard this interesting news, my thoughts immediately harked back to the varied office experiences of the magazine as I recalled them, and, chatting about them with the Editor I allowed myself to be persuaded to reminisce for the benefit of any readers who might care to read about or be reminded of "old times". Not such very "old times" when measured by years, but infinitely distant considering the marvelous growth and other physical changes that have since taken place in and about the College of Agriculture.

Just where THE COUNTRYMAN began its existence I don't know for it had reached its third volume in 1905-6, when, as a freshman competitor, I tackled my first "assignments" under the tutelage of J. Eliot Coit, Ernest Kelly, M. W. Evans and the rest of that year's board. Perhaps Professor Warren will some day tell the story of the very beginnings of the magazine. I, for one, would welcome it gladly. But I don't believe they could have occurred under much humbler circumstances than those of 1905, for the outward sign of the COUNTRYMAN as I found it consisted of one desk—or was it two?—crowded back at the west end of historic "Morrill 19". There will be a good many readers to whom that name and number will mean nothing, but there will be a good many others whose minds will jump back to the second floor of the north end of Morrill Hall, where in those "good old days" practically all the administrative and a good many of the instructional activities of the College of Agriculture were focussed.

There were disadvantages associated with those quarters, I admit; but there were generous compensations too,—frequent opportunities, when outwardly busy with files, indexes and proofs, of absorbing vital and absorbingly interesting lectures by Dean Bailey, Professor Roberts, Professor Craig and others in courses for which I was still ineligible. Somehow that dingy, old room with its small but industrious classes, and the intimate, informal contact between students and faculty that characterized it comes first to my mind as a real visualization of Ezra Cornell's practical and democratic institution "where any person can find instruction in any subject". Perhaps this is because first impressions sink deepest; perhaps because the College has grown to dimensions beyond the power of anyone to grasp in the form of one definite impression.

The next season brought a most gratifying change, for in some way or other THE COUNTRYMAN obtained the large basement room at the south end of Morrill under Mr. Williams' office—the Sub-Treasury as we cheerfully styled it in blissful disregard of the inappropriateness of the name in view of our financial status. Here, in addition to new furniture and equipment, we enjoyed the honor and advertising value of having the name of the magazine in fine gold letters on a front window where every student then in the University must at some time have seen it—and then, probably passed on unimpressed. That office marked an epoch, however, for while there THE COUNTRYMAN received in the enthusiasm, ambition and genius of "Bert" Crocheron and good old "M.P." Jones, an impetus in the direction of increased growth and improvement that has never lost its influence.

Another year brought about the migration of the College to its new buildings and in the distribution of the, then, abundant space, THE COUNTRYMAN was allotted a splendid location on the main floor of the main building—the office now occupied by Mr. Adams and
the Informational Department. Here in the very center of things we enjoyed and were stimulated by a new sense of prestige and responsibility. Yet the quarters had something of a temporary atmosphere, for our previous isolation had rather unfitted us for the quiet, restrained existence necessary when separated only by thin folding doors from the adjoining lecture room; and already the never ceasing growth of the College was putting a premium on the value of the floor space we occupied. Ever long the administrative needs became irresistible and a redistribution of offices found THE COUNTRYMAN, still intact, thriving and as ambitious as ever, in another basement domicile—this time the room just to the right of the foot of the main stairway. Here, again, was more space and freedom than we had at any previous time enjoyed and here, if I am not mistaken, the magazine remained in peace and contentment for some years after my colleagues and I turned its management over to a succeeding board. Since then, but one move has been made to quarters at the opposite end of the basement, not counting the most recent and most striking change which was mentioned in last month's issue.

Thus THE COUNTRYMAN has certainly seen its "ups and down", literally indeed, from second story to basement, but now in all truth it has landed, as Dr. Bailey would have said, "close to the ground". It is worth while noting, too, that never has it suffered the lack of that interest and encouraging support that the Ex-Dean once so well expressed and always so splendidly exhibited.

"Regarding an office for THE COUNTRYMAN", he wrote, soon after the occupation of the new buildings, while a thousand matters of organization and detail must have been clamoring for attention, "I cannot say now what or where it will be. But you may be sure that something will be arranged and that there will always be a place somewhere for THE COUNTRYMAN"—or words to that effect.

Certainly that attitude has been inherited and fostered by the new administration; which fact, to my mind, is not only a cause for congratulation and rejoicing, but also a recognition of a responsibility, an obligation, an important role in the development and work of the College which every student, whether on the Board or not, should be proud to accept and maintain with unfailing, loyal support and cooperative effort.
Garden Lilies

LIKE perfumed censors, emerald hung
The waxen lily-bells were swung,
Not hothouse blooms whose subtle sweet
Gave evidence of tropic heat
These garden lilies held a dream,
Of sun-lit fields, and silver stream,
Each golden heart with promise rife,
Of resurrection, and of life.

The old man smiling reads anew;
The message of the sun and dew,
Translated from the book of books,
As in the waxen bloom he looks,
A golden peace, a spotless dower
Emanates from out the flower,
No room for doubt, no thought of creed,
His Christ, Our Lord is risen indeed.

—Carabel Lewis Munger
Rural Education

The department of Rural Education in the College of Agriculture is young. The whole movement for better educational opportunities for young people in the open country is in its infancy. That departments interested in such work should follow rather than precede departments concerned with material questions of farming is natural. The material problems of the country are the first to challenge attention. Their successful solution in a large measure conditions the development of education in the country. The fact that departments of rural education are young, and that they deal with many problems, the successful solution of which does not at once bring results, capable of being measured in dollars and cents, does not mean that they are not an important part of any state's scheme of agricultural education. The New York State College of Agriculture will never be able to reach directly any large share of these young people in the State, who may desire country life education. Its ultimate success will not be measured by such means but rather by the extent to which it prepares young men and women, who are able to go into the schools, either as teachers or patrons and bring about a redirection of these schools. When this change comes young persons in the country may have an education in terms of their environment. Poor rural schools are undeniably one of the disintegrating forces of country life. To bring the desired change means that there must be a force of rural leaders who are rural workers. In this field lies an opportunity for colleges of agriculture.

The Student and the Committee

Student committees exert a powerful influence in two directions, they are absolutely necessary to the success of the student activities of the University, and they aid materially in the development of character of the participants. An important phase of a college education is the forming of habits. Punctuality, originality and trustworthiness are qualities that committee work develops.
To be appointed to a committee affords an opportunity of being of real service to the University. It is a compliment and a recognition of ability. The student has the chance to develop originality in proposing and carrying out new ideas, and by enthusiastic and persistent hard work he will bring out latent resources in himself which he never dreamed that he possessed. Moreover he comes in contact with the men of the University who are really doing things and by comparing himself with them he can measure his own worth. Besides making himself known to these men he becomes better acquainted with the faculty. The members of the staff are frequently called upon to recommend students and one of the strongest points in a man’s favor is that he is a faithful and energetic committee worker.

As it is in college so it is in after-life—the entirely dependable man, whose promise is as good as the deed already done, is a great asset to his community and he is the one who is selected for the important positions.

The CORNELL COUNTRYMAN invites all organizations of the College to hold committee meetings in the COUNTRYMAN Building. Please notify one of the senior officers of the staff a few days before such a meeting is planned so that there will be no conflicts.

A significant thing about the visit of Dr. F. H. Newell, The Reclamation Director of the U. S. Reclamation Service to the College of Agriculture was his statement to Professor Warren that the real problems in the irrigation of arid areas in the West are fundamental problems of farm management. He said that the engineers had been able to solve all of the physical difficulties stupendous as they were.

But after the water was on the land there came, he said, the fundamental question of how well the individual farmer was going to take advantage of the opportunities offered. In trying to solve this question, Director Newell has been making a number of investigations, and among the books which came to his attention was Professor Warren’s “Farm Management,” which seemed to the Director to be the best work of the kind with which he had come in contact. He therefore made it a point while at Cornell to meet Professor Warren. In the course of their conference Professor Warren outlined a few of the steps necessary to make farming a success in any community, and together he and Dr. Newell came to the conclusion that, after all, the human element, in connection with knowledge and experience on the part of the individual farmer, is the basis of success or failure. Hence these regions furnish another opportunity for men trained in Agriculture.

The subscription price of a magazine pays but a very small part of the costs of publication. Advertising bears the lion’s share. A magazine must obtain results for the advertiser to hold his patronage. As the subscription price of the COUNTRYMAN is especially low, we urge each reader to mention the COUNTRYMAN when writing to advertisers. It means a better magazine for you.
CAMPUS NOTES

Professor William Howard Taft, of Yale, former President of the United States, was the speaker at the Convocation Hour on March third. Over three thousand students, comprising one of the largest audiences in the history of Cornell, gathered in Bailey Hall to hear his address on "Signs of the Times". On the three following days Professor Taft spoke on "The Anti-Trust Law", "The Law as amended by the Clayton and Federal Trade Commission Acts", and on "The Presidency". The crowd which assembled to hear the second talk on "The Anti-Trust Law" was so great that Sibley Dome could not accommodate them. The two following addresses were given in Bailey Hall. The chance to hear the views and enjoy the personality of Professor Taft was greatly appreciated by the students.

Among the new courses added to the curriculum of the College of Agriculture is that of a brand new course in Agriculture Journalism initiated by Professor Bristow Adams at eight a.m. on February 26. The introduction of such a course into the "Ag. College" is significant in that it is the first course of its kind ever given in Cornell University. Professor Adams who is head of the recently created Publicity Bureau in the College is especially well qualified for his task, for his experience as reporter on metropolitan newspapers, as editor and as the recent publicity agent of the Federal Forestry Service give him a firm foundation on which to base his instruction in such a course.

The attendance of some fifty undergraduates, graduates and instructors at the first lecture given by Professor Adams augurs well for the popularity of such a line of instruction. As stated by the lecturer the scope and purpose of the course is not to make journalists, but to help men to think straight and write clearly. Lectures will be given every Friday at eight a.m. in Room 192 in the Agronomy Building. No credit is given and attendance is limited to upperclassmen in the University and to members of the instructing staff.

The members of the "Ag." College Agriculture Basketball Team deserve a lot of credit for the genuine way in which they are "playing the game". It is interesting to note, and watch Agriculture climb, slowly but surely, away from the other College Teams. On February 25th Agriculture, Chemistry, C.E., and Veterinary were tied for first place, all with a score of .750%. On March second this quadruple tie was broken by Agriculture defeating Sibley by the score of 60-11. This made our score .800% with Chem., C.E. and Vet. tied at .750%. On March third Agriculture won from Vet. by
the score of 37-10. Ag. and C.E. are now tied for first place.

The present standing is:

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Eight sophomores have taken advantage of the new system of work in courses in vegetable gardening. These men have left the University to spend the time until next September in gaining practical experience in commercial vegetable production. They will work under some of the most progressive vegetable growers in the country. Under the new system, these students will spend three consecutive terms at the University beginning next September. They will take Vegetable Gardening during the spring and summer terms. This course covers a full growing season and consists mainly of outdoor laboratory work. The following fall term will constitute their vacation for that year. The spring and summer terms of 1917 will be devoted to advanced work in vegetable gardening. Their graduation will be in September instead of in June.

It is confidently expected that this plan of courses will prove of inestimable value in preparing men for both professional and field work in this rapidly developing branch of agriculture. The important feature of the scheme is that it adapts the college work to the growing season rather than to the conventional college year.

The following sophomores are taking the course: C. R. Bradley, E. E. Conklin, Paul Cutler, Wm. Feller, J. K. Herrick, J. D. Loughlin, S. Pomeranz, and H. S. Woodward.

Miscellaneous Notes

The Floricultural section of the Lazy Club has elected the following officers: S. B. Emerson, '16, A. S. Hasbloom, '16, and J. B. Clark, '15, members of the executive committee; and H. F. Smith, '16, as club representative to the Agricultural Association.

The members of the Agassiz Club attended a party on Wednesday evening, March 3rd, in the Home Economics Auditorium.

The Department of Forestry will continue their work of reforesting the watershed of Fall Creek near Varna. About 30,000 pines will be planted this year. The work gives students specializing in Forestry a chance to secure practical experience in dealing with problems of maintaining water supply by reforesting watersheds.

Rapid progress is now being made in completing the new Brooders and Laying Houses which are located in back of the Poultry Building. It is expected that these buildings will be finished before the Easter Vacation, and that all the buildings connected with the Poultry Department will be completed and in use before commencement.

The Animal Husbandry Department has purchased two hand colored reproductions of Rosa Bonheur's "Horse Fair," and "Plowing." These have been framed in wide dark wood frames and hung in the main entrance hall.

The Floriculture Department occupied a booth in the Grand Central Palace, New York City, during the International Flower Show held there March 17-23.

Again Agriculture 47 "Busted" heads the list in the From the College number of "busted" at the end of the first agriculture term. Out of a registration of 4,753 students in the University 144 were "busted," and 160 were put on probation. To this number Agriculture
contributed 47 students "dropped," and 30 students on probation. 

The number of "bustees" in the University has slightly increased, for last year the percentage was 3%, and this term it is 4%. Likewise with those on probation, last year the figures were 3.3% and this term they are 4% of the whole.

Below is a table showing the number of "bust" and probation notices sent out by the College of Agriculture for this year and the last four years:

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Departing from the usual custom of holding the monthly Assembly in Roberts Hall on account of the large attendance, the March Assembly was held in Bailey Hall on March 11. This was an unusual Assembly as it was the first one to be held in the hall which is named after the man who founded the Assemblies,—Dr. Bailey. Director Galloway, the first speaker, gave a short interesting talk on "Being a Congressman." Then followed the entertainment for the evening which was in the form of a mock hearing by a U. S. Congressional committee on Agriculture. The various manufacturing concerns whose welfare was involved by recent acts of legislation presented their arguments before the committee, the chairman of which was D. S. Hatch. Venders of quack medicines, oleomargarine interests, dairy interests, and finally a government official all presented their views before the committee. Many of the lobbyists presented concrete evidence that their goods were absolutely free from fraud by displaying their material. This was particularly the case with R. P. Sanford who had a splendid display of Mellen’s Baby Food which included two babies. Following the congressional hearing everybody adjourned to the cafeteria where doughnuts, cocoa and coffee were served.

Dr. P. H. Dorsett, of Federal Investigator gives Seed and Plant Introduction of the United Brazilian Fruits States Department of Agriculture, recently gave a talk on "Fruit I found in Brazil." This lecture was illustrated by lantern slides made from photographs which Dr. Dorsett secured during his recent trip through South America. Among the many important facts which he brought out was the origin of the Navel Orange. This orange, the sale of which in this country amounts annually to many millions of dollars, originated in Brazil. Many of the plants which Dr. Dorsett has studied are being contemplated by the Department of Plant Industry for introduction into this country.
FORMER STUDENT NOTES

Former Students—Your classmates are anxious to know what you are doing. Write today, giving us some information about your work. Also if you can employ a student on your farm during next summer, please let us know, as there are many seeking such positions.

'88, B.S.A.—G. D. Brill has been engaged in several lines of work since he left Cornell. He has been farming, teaching agriculture in China, has been in the Philippines, and is at present farm superintendent at Bedford Hills. This farm consists of 187 acres, 15 of which are in peaches, and 12 in apples, and some in hops, fully 100 acres are under cultivation. He has on this farm 60 cows, 7 horses, and 2,500 chickens.

'94, B.S.—Raymond A. Pearson, head of the Iowa State Agricultural College at Ames, Iowa, so it is announced, is being considered for the position of State Commissioner of Agriculture by Governor Whitman. Mr. Pearson was prominently associated with the State College of Agriculture and later appointed state commissioner of agriculture in this state in which office he was succeeded by Calvin J. Huson, who has handed in his resignation to Governor Whitman. In the New York State office Mr. Pearson would receive a salary of $8000. As director of the Iowa College he receives $9,000 a year.

'98-'oo Sp.—Among those who attended Farmers' Week at the College was A. L. Richie of Riverton, N. J., who is at present on a fruit farm of ninety acres. A specialty is made of peaches which gave a yield last year amounting to 15,000 baskets.

'01, W. C.—Harry B. Winters' address is 61 South Lake Avenue, Albany, N. Y. From 1894 to 1908 he was general manager of the Winters Farm at Smithboro, N. Y. From 1909 to 1910 he was general manager of the Fairfield Dairy Company of Montclair, N. J. From 1911 up to the present time he has been Deputy Commissioner of Agriculture of this state.

'02, W. A.—E. B. Sharpless of Avondale, Pa., has been engaged in farming, dairying and creamery work since 1902. His farm contains 150 acres. Alfalfa proves to be a satisfactory crop. General farming is practiced, selling part cash crops and feeding about 100 hogs per year. He has 40-45 pure bred and grade Guernseys and about 20 head of young stock. Mr. Sharpless was in Ithaca during Farmers' Week.

'08, G. A.—John E. White is located on a farm at Sagaponack, N. Y. He has 40 acres planted to potatoes, 10 to corn, and raises hay and grain to feed his stock, with some left over to sell. He also takes care of 7 acres of potatoes and 3 acres of corn for a city man having a summer home at that place. White has 7 horses, 2 cows, and all the up-to-date machinery necessary to carry on his business to the best advantage.
"07-'08, W.P.—Deroy Taylor is proprietor of the Deroy Taylor Co., which owns a poultry yard at Newark, N. Y. Chickens, ducklings, bees, and queens are sold by them. At the present time they have 3,000 laying hens. Last season 100,000 chicks were hatched from a 27,000 egg incubation.

"08, Sp.—The Seybert Institution of Philadelphia has organized a Bureau of Social Research under the direction of Carol Aronovici and with the promised co-operation of other social agencies. Work has been commenced on the records of the children's agencies in the city with a view to standardizing their work and focusing their activities on the problems that seem uppermost at the present time.

"08, B.S.A.—A. W. McKay has left the Department of Agriculture and is now supervising field and packing house work for the H. C. Schrader Co., of Orlando, Florida. They are attempting to apply commercially the principles of careful and efficient handling of citrus fruit worked out by Department Investigators in that state and in California.

"09, B.S.A.—Charles F. Boehler, formerly with Warren H. Manning, Landscape Designer of Boston, and G. H. Miller, Landscape Architect of the same city announces that he has opened an office for the professional practice of Landscape Architecture.

"09, W.A.; W.H. '10.—Virgil H. Tift is located in northern Oswego County on a 100 acre general farm, near Lacona. The crops grown include potatoes and fruit. It is his plan to increase the farm and to run a pure bred Holstein business along with the fruit growing.

"10-'11, W.P.—M. M. Griffiths of the Glen Farm at New Hartford, N. Y., sends us an interesting account of his work since graduation.

Upon leaving here he set about to establish a retail egg trade around Utica. After making many personal visits to poultry plants he purchased eggs of the Wyckoff strain, of the S. C. White Leghorns. He reared 150 fine pullets from a total of 400 eggs. These have netted him a profit of $1.75 a bird.

The following year the flock was increased to 500 and he made a profit of $2.00 per bird.

"12, B.S.—E. P. Smith has recently been appointed Farm Bureau Agent for Chenango County. He is a former Alumni Editor of the COUNTRYMAN.

"12, Sp.—Dave Moses has been manager of a fruit and vegetable farm in Westchester County. His address now is 228 Westchester Avenue, Mount Vernon, N. Y.

"12, B.S.A.—Edwin P. Smith has been engaged in managing a farm at Oxford Depot, New York, until January of this year. On February 15, he began work as Manager of the Chenango County Farm Bureau with headquarters at Norwich.

"12-'13, W.H.—The Dellwood Poultry Farm of Mount Kisco, N. Y., has as its manager W. H. Cochran, jr. Three breeds of poultry are kept, S. C. White Leghorns; N. C. Rhode Island Reds; and Barred Rocks. Forty strong pullets have been trapnested, and records have been obtained as follows. From Oct. 16 to Feb. 1, 71 eggs, 68 eggs, 60 eggs, 54 eggs. The egg production for December was 33% and for January was 42%. Registered Guernsey cattle and Berkshire swine are also kept on this farm.

"13, Sp.—C. W. Wilbur has been in charge of the fruit and vegetable departments of a large swamp reclamation company at Elba, N. Y. He is now manager of the J. Hungerford Smith 300 acre fruit farm near Rochester. His home address is Pittsford, N. Y.

Continued on page 622.
Seeds with a Lineage

Unequalled original "stock," improved by seventy-five years of most careful cultivation and selection, make Carters Tested Seeds the "Seeds with a Lineage."

CARTERS TESTED SEED include grass, flower and vegetable seeds of every desirable variety. Used rightly, they will give your grounds the same rich beauty that distinguishes the notable Gardens and Estates of Old England. Ask any gardener with experience in Great Britain. He will tell you that Carters Seeds are unequalled.

Write for our 1915 catalogue—"Garden and Lawn."

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BOSTON, MASS.

Branch of JAMES CARTER & CO.
Raynes Park, LONDON, ENGLAND
Butter Made With
CHR. HANSEN'S
Danish Butter Color and
Lactic Ferment Culture

Won First and Second Prizes
at the following shows:

National Dairy Show, Chicago, Ill.
International Dairy Show, Milwaukee, Wis.
Dairy Cattle Congress, Waterloo, Iowa.

Use Chr. Hansen's
Rennet Extract Cheese Color
Rennet Tablets and Cheese Color Tablets

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Amsterdam, N. Y.

Manufacturers of
Pure (OLD PROCESS)
Oil Meal

We use only the best grade of Flaxseed and our products are free from admixtures of any kind. Our oil-cake meal is very high in protein. Wonderful results are realized from its use as a feeding commodity.

Write for Prices

The Middleman
(Continued from page 577.)
of temperatures make the egg watery and although the eggs are newlaid, it gives them every appearance of being held sometime and they are graded as seconds. They should be kept at as even a temperature as possible, notwithstanding that they may be held only a few days before taken to market. This accounts for a first class cold storage being a better place to hold eggs than on the farm.

The average farm is not equipped for holding eggs. However, they are held there, on speculation in the fall and winter and under old methods, profitably so, as eggs that came from the farm were always taken for fresh, regardless of how old they were and they got the full benefit of the advance in market price.

Under the new methods of buying on a quality basis, this abuse is gradually but surely dying out. As an offset to this, however, some of the Agricultural Colleges are telling the farmers how they can put the eggs down in liquid glass and have them keep as good as fresh. There is no harm in this, if they use the eggs themselves, but it does not seem right to advise them to do this for speculative purposes. They are not as good as fresh, and expert candlers can detect them, however, many buyers who are not expert, may accept them at full price and get fooled.

In buying on a quality basis, it can readily be seen that if a farmer holds his eggs for several weeks on an advancing market and hopes to make money by so doing, his hopes are not realized, for while the market has advanced in price, his goods have deteriorated in quality and they drop into a lower grade for which a lower price is paid. This demonstrates very clearly that it pays the producer better to sell them while newlaid as they are never worth more than at that time.

(Continued on page 600.)
Orchardists and Farmers Supply Stores

Weaver Hardware Co.

No. 1 Aqueduct St. 31-35 E. Main St. 12-18 Mill St.
ROCHESTER, N. Y.

Complete Catalogs of

FORKNER Spring Tooth TILLERS : WATERLOO BOY Gas Engines
WE-HA-CO POWER SPRAYERS
PRUNING—GARDEN—TILLING TOOLS OF ALL KINDS

Vreeland’s “ELECTRO” Spray Products—SCALECIDE—sent upon request

One Follows Another

That’s been our experience in selling the Natco Imperishable Silo. Feeding profits greatly increase with its use, and its durability, convenience, perfect silage preservation, freedom from upkeep expenses, and attractiveness make it the inevitable choice when an additional silo is to be built. A battery of Imperishables will successfully defend the feeding profits of several generations, for these silos are proof against time, storms, decay, fire and vermin. The

Natco Imperishable Silo

is made of vitrified hollow clay tile which will last forever, and being air, moisture and frost-proof, preserve the ensilage perfectly. Steel reinforcing bands, laid in the mortar between each tier of tile, give this silo the strength to resist practically any pressure. Cannot warp, twist, crack, crumble or dry out. Needs no painting or adjusting. It is truly an imperishable silo.

A list of owners of Natco Imperishable Silos in your State sent upon request. Writenearestbranch. Ask for Catalog 38.

National Fire Proofing Company
Organized 1889

Pittsburgh, Pa.


“The Silo That Lasts for Generations”

In writing to advertisers please mention The Cornell Countryman
The Middleman
*(Continued from page 598)*

There is a very legitimate field for
the middleman in this kind of work
and there is no more effective way to
reach the producer with the high
ideals taught in our Agricultural Col-
leges, than through such co-operation
as we have endeavored to outline in
this article.

The Soils and Agriculture of the Southern
New York Highland Region
*(Continued from page 584)*

width, and along other rivers there is
occasionally a similar extent of such
soil. Usually it is confined to a nar-
row irregular ribbon.

The soil is generally a dark gray
material due to the presence and deep
distribution of humus. In the large
valleys silt loam prevails. In the
small valleys the material is more
variable and ranges from silt or clay
loam to sandy and gravelly loam. The
drainage is frequently defective; sea-
sonal overflow is a menace. The lime
content is moderate. Clover will
 Generally grow well barring insect ene-
mies. It is excellent corn land and
produces good yields of hay and grain
where flooding is not too serious.

Vegetables and canning crops,
especially peas, are grown in the Gene-
see valley and near some of the larger
cities such as Binghamton, truck crops
are produced on this soil.

Farm conditions. The prevailing
type of farming is hay and grain com-
bined with some live-stock. Dairying
is extensively developed. In the
eastern part in the Chenango and Sus-
quehanna valleys is one of the best
developed market milk regions in the
state, and again in the western part in
Chautauqua and Cattaraugus counties
dairying is developed for butter and
cheese production. In the middle
portion of the state, dairying is im-
portant but is more combined with a
prominent money crop such as pota-
toes and tobacco. A large acreage is
in grass, and hay is extensively shipped.
Oats and buckwheat are the leading
grains on the hills while corn is grown
for silage but not extensively for

Climate and soil conditions dictate
these crop relations and they in turn
combined fairly well with livestock
production. The cool summer tem-
perature on the hills is conducive to
potato production which is best de-
veloped in the region of northern
Steuben county. Tobacco sticks to
the valleys near Elmira. Tree fruits
are not extensively grown, especially
for market. Certain varieties of apple
may be well grown on the deeper hill
soils in sheltered coves. They are not
suited to the hill tops or to the valley
lands.

The size of farms ranges from about
100 to 300 acres. The farm manage-
ment survey of Thompkins county*
has shown that the combination of
money crops with dairy and live-
stock gives the largest profits and that
the returns increase with the size of
the farm as far as the data go, or up
to about 300 acres.

There is an extreme range in price
of land depending on soil, location,
buildings, markets, roads and other
factors. The remote hill land sells at
from fifteen to fifty dollars. The
lower hill and valley soil is valued at
from forty to one hundred and twenty-
five dollars, or even more. In the
mountain section there is much land
not suited to farming and throughout
the region timber areas are common
on the steeper slopes.

Problem of improvement. The prob-
lems of farm management are most
difficult on the poorer soils such as
the Volusia silt loam and on the
higher hill lands that are inevitably
remote from business and shipping
centers. The fundamental difficulties
are (a) the deficiency of lime in the
soil, (b) the need for better subsoil
drainage, (c) short growing season
and low temperature on the hills, and

*Cornell University Expt. Station Built.
295.

(Continued on page 602)
It’s Easier, Cleaner, Quicker
— for one man to milk 20 or more cows with a B-L-K Milker than it is for two men to do the same number by hand.

Ordinary farm hands, too, can produce certified milk in ordinary stables by exercising reasonable care in handling the easily cleaned machines.

**B-L-K Milkers**
cut cost and labor of milking in two

If you are interested in producing high-grade milk, and greater profits, then write us. Send a postal for B-L-K Booklet. **FREE**
Illustrated and full of information

If, when writing for the booklet, you will send us a rough plan of your barn and tell us the number of cows you want to milk, and state what power you intend using, we will tell you about what a B-L-K Outfit will cost you. But send for the booklet by all means.

**D. H. BURRELL & CO.**
LITTLE FALLS, N. Y.
Manufacturers also of
“Simplex” Link-Blade Cream Separators and other “Simplex” specialties.
“THE BEST IN THE WORLD.”

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**“Corn is Corn”**

Very true, corn is corn—but we have pop corn, sweet corn, field corn, and almost endless varieties of each.

So when you dismiss the subject of cleaning with the thought that all washing agents are the same, may you not be overlooking the possibility that they are not.

We guarantee that after you have used one barrel of **Wyandotte** Cleaner and Cleanser, you will note a very great difference in the cleaning it does compared with the cleaning any other washing agent does you have ever used. It differs both in being more efficient and more economical. Can you afford to pass it without a trial? **Ask your dealer or order from your supply house.**

**The J. B. Ford Co., SOLE MFRS.** Wyandotte, Mich.
This Cleaner has been awarded the highest prize wherever exhibited.
It Cleans Clean
The Soils and Agriculture of the Southern New York Highland Region
(Continued from page 600)
(d) steep roads. These have combined to produce low crop yields and to deter the application of necessary methods of soil improvement. The reduced production has limited the employment of labor and curtailed the social and educational activities of the community. On the best types of soils these difficulties are less evident. As a business investment the better soils and the more favorable locations are to be preferred at the prevailing price for land.

To manage the soils of this region for the growth of the prevailing crops without correcting their lack of lime, humus and drainage is to invite disaster for the yield will continue to decrease. By the judicious application of these improvements almost any of these soils will give a much better yield.

Farm readjustment should receive careful attention throughout much of this region. Especially on the poorer soils the average size of farms is too small. Farms should be larger and, so far as possible, the better soils should be combined with the poorer. This brings the farmstead nearer the shipping, school and social center. It makes a better balanced farm unit. The better soil may be used for forage and grain crop production. The poorer and more remote land may be utilized for pasture and some tilled crops at small expense. The larger farm unit is also demanded due to the fact that the problems involved are intricate and difficult and only capable managers are effective. Only relatively large areas of land afford adequate compensation to such a man.

While the highland region has a variety of soil and much good land it needs skilled farm managers, judicious soil management and considerable readjustment to secure good results.

WELL ROTTED HORSE MANURE
DRIED and GROUND
(Diamond Brand Compost)

A natural manure for the use of Truck Growers, Farmers and General Farming Purposes.

It is largely Humus and rich in Plant Foods—Nitrogen, Phosphoric Acid and Potash—which are immediately available.

Positively free from weed seeds.

It will please the most critical grower and insure good results.

Put up in bags of 100 lbs. each.

Write for Circular "R" and prices

New York Stable Manure Co.
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A GRACEFUL Dancer never has trouble filling his program. He is an "attraction" wherever he goes.

Dancing, correctly taught, develops gracefulness. We can teach you to become a graceful dancer because we know how to dance as well as how it should be done.

You learn to dance but once,
You learn it right at MARTIN'S

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Ithaca Phone 709-C
Bell Phone 242-W

How One Man Makes Money Growing Greenhouse Vegetables

He has a goodly sized tract of land next to a hotel resort colony. He grew lettuce, radishes and spinach in cold frames and sold them to the hotels. It paid. He built a small greenhouse. It paid splendidly. Then he built another and grew cucumbers. Then another for tomatoes. Then still another for flowers. He has five autos now and rides around and certainly has all the looks of "money in the bank." He is now considering tearing down some of his first houses that he built himself, and having us replace them with houses of ours, like his other ones.

He claims he would be many dollars in pocket if we had built for him at the start.

Think it over and if you want to get in a good paying business talk it over with us by mail or in person.

For over half a century we have been building greenhouses and we think we know something about how they should be built.
Hogs Gain Faster

Prove It By Making This Test

Put a bunch of hogs or shoats in a separate pen or enclosure—feed them SAL-VET 60 days as directed, and you will get the best proof of its merits as a conditioner and worm destroyer. Wormy stock cannot thrive on the choicest of rations—balanced or unbalanced. Worms annoy—keep animals ravenous—run-down—ill-natured—discontented—unthrifty—liable to any disease.

Hon. A. J. Lovejoy, Roscoe, Ill., writes: "Please send us two barrels of SAL-VET at once. This is the best thing we have ever used. We use it for sheep, horses, and over 100 head of hogs and find it all you claim."

J. E. Snell, Flora, Ind., says: "SAL-VET is a wonder. I had 14 shoats that would not fatten. I fed them SAL-VET and I was very much surprised to see come from them rolls of worms from 12 to 14 in. long. These shoats mended at once, and are now doing finely."

— is not a food, but a medicated salt, fed with the ration, or separately according to directions. I guarantee it to rid stock of stomach and free intestinal worms, to aid digestion and to condition the animals so fed. All stock look better, do better, act better. Every animal having free access to SAL-VET is a standing advertisement of its value. I'll prove its value to you at my own risk.

Send No Money—Just the Coupon

Tell me how many head of stock you want to feed—I'll ship enough SAL-VET to last them 60 days. Simply pay the freight on arrival—feed the SAL-VET as directed—at the end of 60 days report results. If SAL-VET has not done all I claim—I'll cancel the charge—you won't owe me a cent.

SIDNEY R. FEIL, Pres.

Where you saw it will help you, them and us.
If you want to increase the selling power for your next catalogue, if you want to make your advertising as effective as possible, you should look into the question of using color reproductions. Our success lies, not alone in the making of proper plates but in printing them as they should be. Our product is used by companies of international reputation. We shall be pleased to submit estimates or samples of work.

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Write for our circular

The J. A. Cross Hinged Extension Co.

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More Eggs!

per hen will be an important factor in increasing your profits. After May 1st a few eggs from our trap nested high producing hens will be offered for sale. Ask for information at once. Also ask about the Mid-Season Sale of High Producing male birds for breeding purposes.

A Few of the Cornell Records

<table>
<thead>
<tr>
<th></th>
<th>1st yr.</th>
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<th>3rd yr.</th>
<th>Total eggs laid 3 yrs.</th>
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<td>Lady Cornell</td>
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<td>200</td>
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<td>Cornell Prolific</td>
<td>243</td>
<td>162</td>
<td>159</td>
<td>529</td>
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<td>Cornell Laywell</td>
<td>205</td>
<td>165</td>
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<td>665</td>
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<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
<td>178</td>
<td>567</td>
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</tbody>
</table>

Department of Poultry Husbandry, N. Y. State College of Agriculture, Ithaca, N. Y.

The two indispensables of Modern Business

THE DICTAPHONE is used in the business office of Cornell University and in several departments of the University and Agricultural College. The Dictaphone is indispensable to the man of affairs.

Telephone or write for information to

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Where you saw it will help you, them and us.
College Men’s Headquarters at the Panama-Pacific Exposition

will be at Old Faithful Inn in the Yellowstone National Park Exhibit of the

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The Shortest and Most Direct Route to San Francisco

Thousands of the alumni and undergraduates of the great colleges of the East will gather and register at Old Faithful Inn in the commodious quarters provided for that purpose. It will be the only place on the grounds where information can be had of alumni members or undergraduates attending the Fair.

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of your broken Glasses and bring them to me, in less time than you think I’ll grind new lenses, use your old mounting, adjust your glasses perfectly and you are ready to see clearly once more.

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Are the two 14x30 Unadilla Silos on this fine New Jersey farm, and you can just believe they wouldn't have been erected in preference to other makes and types had not the owner investigated their merits and verified all claims of quality, durability, greater convenience and ability to cure and keep silage prime, in any clime, and for any length of time.

By their reliability Unadilla Silos have earned the confidence of dairymen and stock feeders in all parts of the Union and their success is due to just this one fact—that every owner can depend on his silage curing right, keeping pure—free from mould and rot—and remaining succulent and as palatable as June grass to the bottom of the Silo. And, remember, the Unadilla is guaranteed against decaying out for a five times longer period than the tile manufacturer guarantees his product against cracking or bursting.

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is portable, Sanitary, Cozy, and Vermin Proof. Has an open-air front and tight, sectional floor, quickly adjustable into a breeding pen, colony, brooder or laying house. Easy to erect with hammer and wrench.

Write today for catalogue illustrating and describing our products.

UNADILLA SILO CO.
Box 22, Unadilla, N. Y.

Reminiscences of a Fruit Grower

Continued from page 568.)

He must watch the fertilizing problem and from a scientific standpoint. He must know what crops his soil is adapted to and must also know how to take the least fertility from his soil that it is possible to take and grow good crops. In other words, he must see to it that he returns to the soil fully as much or more of the ingredients than he has taken from it in any crop. He has problems of moisture in his soil, to see to it that his soil has the proper amount of moisture. If there is too much, it must be drained; if there is not enough, he must conserve what moisture he has by cultivation and filling the soil with humus. He must never miss a chance of sowing cover crops such as are adapted to his soil and climate. Clover sown at the last cultivation in a corn crop even if it is plowed up again the next spring will pay a good profit on its cost.

Finally, as I look to the future and I see the rapidly increasing population of this country, all of whom must be fed and this food must come from the soil, I believe if we advance in this country in the next 20 years as we have in the last 20, that it is going to tax the resources of all our available land, and I believe the man who can help nature to produce more bountiful crops and can gain control of the enemies of these crops has a field before him that will be full of interest and profit and he will be a blessing to the country.

The Jerseys

ARE NOT SHORT-LIVED

In 1913 eighteen Jersey cows were officially tested which averaged 12 years and 7 months of age. Average milk production 867 lbs. Average butter fat 327 lbs. Longevity, Constitution and Economic Production are Jersey characteristics.

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Where you saw it will help you, them and us.
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Farmers—orchardists—dairymen who let the NOVO do their work get their work done right and at a big saving of time and money.

Building of farm-machinery specify the NOVO because it's the reliable engine for every purpose. Over 85 per cent of the concrete mixer manufacturers after testing many different makes have selected NOVO. For ease of operation—low cost of maintenance—economy of fuel—lightness—compactness—portability you can't beat a NOVO. A written guarantee bond against freezing damage furnished with each engine.

Send for new booklet "Reliable Power."

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NOVO ENGINE CO.
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Spoils No Crop
By Packing

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Ten years service prove the Caterpillar's worth—its use by four European armies shows it equal to the most severe service. Over 2,000 in use.

Write for Catalog No. 288

THE HOLT MANUFACTURING CO., Inc.
PEORIA, ILL.
NEW YORK, N. Y.
Former Student Notes

(Continued from page 610)

'14, B.S.—V. B. Mead left Cornell in 1912, and bought a farm of 150 acres at Voorheesville, N. Y. He first set out ten acres into fruit, from which 1,800 barrels were obtained. Since that time he has set out 25 additional acres chiefly in apples. In August, 1914, he was married to Miss Esther Hopkins, of Boston, Mass.

'14, B.S.—The first Junior Extension Work of the State has just been started by Miss Claribel Nye. Miss Nye is an instructor in Home Economics Department, and is also State Leader of the Boys' and Girls' clubs. This work just started is in Cayuga County, and she expects in the immediate future to commence Junior Extension work in three other counties.

'14, B.S.—E. M. Carman, of Ithaca, has succeeded his uncle, M. J. Mattison as proprietor of the Meadowbrook Nurseries at Englewood, N. J.

'14, B.S.—G. R. Attride, who has been manager of a 600 acre farm in Virginia, is at present employed by the City of New York on the Groton Dam Project.

'14, B.S.—Dudley Alleman is partner on his father’s fruit farm of 125 acres near MacDougall, N. Y. He is holding pruning demonstrations in which he employs Cornell undergraduates. There are several former Cornell students in the vicinity, all managing farms. It is Alleman’s desire that more Cornellmen come to the same region.

'13, B. S.—B. H. Frary is on his father’s 547 acre farm at Pulaski, N. Y. The principal business of this farm is dairying, their herd consists of 40 cows. Besides his dairy he has 300 Rhode Island Reds.

(Continued on page 614)
Light your house and Barns
Cook your meals with
HOME-MADE ACETYLENE
and make your acetylene with a
PILOT LIGHTING PLANT
PILOT plants make Acetylene automatically a
little at a time as you use it in your gas cooking
stove and in your lights distributed throughout
your house, your barns and out-buildings. You
simply fill the generator with the gas-producing
stone "Union Carbide" and water about once a
month.
PILOT plants are approved by the National
Board of Fire Insurance Underwriters.
All told, over 250,000 country homes are using
Acetylene made the PILOT way.
A complete PILOT plant, consisting of genera-
tor, pipes—handsome light fixtures, and gas
cook stove, can be installed in any country home
in a few day's time.
Such a plant is a permanent improvement and
will furnish you with the cheapest, safest and
most practical light and fuel now available for
country home requirements.
Write for our advertising catalogs and descrip-
tive booklets giving all the facts.

Oxweld Acetylene Company
Eastern Works, Newark, N. J. 646 Frelinghuysen Ave.

Lime for Your Land
For lightening clay soils and sweetening sour ones, for increasing
the vigor and brightness of grass, for decreasing the growth of weeds

<table>
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<tr>
<th>Mesh Size</th>
<th>Description</th>
<th>Test Results</th>
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<tr>
<td>25</td>
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<td>Cal. Carb. 53.75, Mag. Carb. 45.50, Total Carb. 99.25</td>
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<td>50</td>
<td>95% pass</td>
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<tr>
<td>100</td>
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</tr>
<tr>
<td>250</td>
<td>61% pass</td>
<td></td>
</tr>
</tbody>
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No acic soils will not produce
A clover sod that's fine,
So if I have a sour soil
I use MEDINA LIME.

Our lime is the finest ground, mak-
ing it immediately available for crop
raising thus assuring the farmer
quick returns.

N. Y. A. Ex Sta. Analysis—Cal. Carb. 53.75, Mag. Carb. 45.50, Total Carb. 99.25
As you see, 100 lbs. of our Lime is equal to 105 lbs. of any pure Cal. Carb. for
neutralizing soil acidity.

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Why not use the highest test and the finest ground? Sold
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What Prominent Authorities Say: "Raw ground limestone mixed with stable
manure, is a perfect fertilizer." Why, then, do you pay from four to seven
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means economy.

Send your order today, to the

MEDINA LIME COMPANY, Medina, N. Y.
EDWARD SIMPSON, PRESIDENT

In writing to advertisers please mention The Cornell Countryman
**Former Student Notes**

(Continued from page 612)

'14, sp.—George Crosier was recently married. He is connected with his father in the produce business at Hall, N. Y.

'15, sp.—Claude S. Hyman left at the end of last term and is now at Athens, Ga., working with the staff of the Georgia College of Agriculture. He is working with G. A. Crabb, formerly of the Soils Department at Cornell, but who is now professor of the Agronomy Department of the southern institution. Hyman soon expects to be in charge of a tract of land of 10,000 acres near Albany, Ga., which is to be extensively developed.


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Send for my Catalogue of Pear, Apple, Plum and Cherry Trees, all select sorts for northern and eastern planting.

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COMFORT SAFETY

Are You Producing High Grade MILK?

If so, why not use a SIMPLICITY MILKER which allows no air to come in contact with the milk which makes the Bacteria count very low?

All parts of the Milker, including all the rubber can be sterilized with steam which does away with the use of brine solution. Why not use a Simplicity Milker and do away with so many parts to wash and keep in repair? Which color cap are you going to have on your milk bottles? Write and find out the cleanest and cheapest way to have the best cap on your bottles.

We have both the single and double Milkers.

F Groff & Son
St. Johnsville, N. Y.
Gun shown above is a No. 4, 20 gauge with 26 inch barrels—the ideal gentleman's gun for field shooting.

You can throw it into a suit case along with your shooting togs and leave your gun case at home.

We furnish the 20 gauge in all grades hammerless, weighing from $19.00 up.

The decreased weight of the 20 gauge allows you to travel farther, finish fresher, get into action quicker, kill your game nearer to you and come home feeling as frisky as a kitten.

The speed of our lock was scientifically timed at the University of Cornell and it was found that it took only a second for hammer to fall.

At the time hammer struck it was traveling at the rate of 233 inches per second.

We figure this greased lightning speed will increase your score at trap or kills in the field at least 5 per cent.

Beautiful catalog FREE; 18 grades guns, $17.75 net to $400 list.

ITHACA GUN COMPANY, BOX 123, ITHACA, N. Y.
Save All Your Chicks—Put Stamina Into Them At Babyhood

The annual loss of young chicks in the United States is staggering. More than one-half the yearly hatch die before reaching pullet age—die through leg weakness, gasps and indigestion. Talk about conservation—think of the millions of dollars that poultry raisers could save by saving most of these chicks. Yes, most of them can be saved—saved by starting them on Dr. Hess Poultry Pan-a-ce-a right from the very first feed. During my 25 years' experience, a doctor of medicine, a veterinary scientist and a successful poultry raiser, I discovered that, by using a certain nerve tonic and appetizer, leg weakness could be absolutely overcome; that the use of another certain chemical that is readily taken up by the blood would cure gasps, by causing the worms in the windpipe (the cause of gasps) to let go their hold and helping the chick throw them off. By combining these ingredients with bitter tonics and laxatives, I found that I could control and invigorate the chick's digestion.

My Poultry Pan-a-ce-a helps put stamina into the chick, strengthens and cleanses its system and sends it along the road to maturity, hardy and robust. Most of the biggest poultry farms in the United States, where chicks are hatched out by the thousand every day during hatching season, feed my Pan-a-ce-a regularly.

Dr. Hess Poultry Pan-a-ce-a is the result of my successful poultry experience and scientific research in poultry culture—there is no guesswork about it. Ingredients printed on every package. Now listen to this:

So sure am I that Dr. Hess Poultry Pan-a-ce-a will make your poultry healthy, make your hens lay, and help your chicks grow that I have told my dealer in your town to supply you with enough for your flock, and if it doesn't do as I say, return the empty packages and get your money back.

Dr. Hess Poultry Pan-a-ce-a is sold only by reliable dealers whom you know—never peddled. ½ lbs., 25c; 1½ lbs., 60c; 2½ lb. pail, $2.50 (except in Canada and the far West). Send for my free book that tells all about Dr. Hess Poultry Pan-a-ce-a.

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—EVERYTHING IN MUSIC—

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Better Outfits for
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Pure Drugs  Accurate Prescription Work  Toilet Articles
A. B. BROOKS & SON, Pharmacists
126 EAST STATE STREET

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<th>Wise THE PRINTER</th>
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<td>ITHACA, N. Y.</td>
<td>Corner Seneca and Aurora Sts.</td>
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<tr>
<td>The Palace Laundry</td>
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<td>323 and 325 EDDY ST.</td>
<td>The Oldest and Largest Drug Store in the City.</td>
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<td>Fred C. Barnard, Propr.</td>
<td>Supplies for Agricultural Students a Specialty</td>
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<td>The ROBINSON STUDIO, Inc.</td>
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<td>214-216 East State St.</td>
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<td>Senior Class Photographers</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>ANDRUS &amp; CHURCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOOKSELLERS, STATIONERS, PRINTERS AND BOOKBINDERS</td>
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<tr>
<td>ITHACA, N. Y.</td>
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</tbody>
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Sharp & Kelsey, Props.


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Yours truly,

Ewell D. Baker.

Forest Lawn, N. Y., Oct. 29, 1914

F. W. Wells, Dansville, N. Y.

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and make your acetylene with a
PILOT LIGHTING PLANT

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PILOT plants are approved by the National Board of Fire Insurance Underwriters.

All told, over 250,000 country homes are using Acetylene made the PILOT way.

A complete PILOT plant, consisting of generator, pipes—handsome light fixtures, and gas cook stove, can be installed in any country home in a few day's time.

Such a plant is a permanent improvement and will furnish you with the cheapest, safest and most practical light and fuel now available for country home requirements.

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Is Better Than
Permanent Pasturage

Yes, recent Experiment Station tests have proven that on medium or high-priced lands, silage-feeding pays better than pasturing on blue grass. But the silo must be durable—it must not entail expense for repairs, for painting and adjusting. Such is the Natco Imperishable Silo—it will defy storms, decay, fire and vermin. It will last for generations. Thousands of owners have found that the Natco Imperishable Silo

measures up to every requirement of the perfect silo. It is durable, convenient, keeps ensilage sweet and succulent in all parts, is free from upkeep expenses, and is attractive. A list of Natco owners in your State will be sent on request. Learn from them that durability means economy, besides freedom from worry and fear of actual collapse. The Natco is built of vitrified hollow clay tile which will endure forever, and being air, moisture and frost-proof, preserve the ensilage perfectly. Steel reinforcing bands, laid in the mortar between each tier of tile, resist all pressure from within or without. Write our nearest branch for Catalog 3 National Fire Proofing Company

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All with Bath

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LITTLE FALLS, N. Y.

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Everywhere Uniformly Satisfactory

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is acknowledged by those who use it as the one cleaner most suitable for dairy cleaning.

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This Cleaner has been awarded the highest prize wherever exhibited.

It Cleans Clean

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is in Morrill Hall
On the Campus

Where you saw it will help you, them and us.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVER—LOUISANA WATER THRUSH FEEDING ITS YOUNG</td>
<td></td>
</tr>
<tr>
<td>Photo by Dr. A. A. Allen</td>
<td>640</td>
</tr>
<tr>
<td>FRONTISPIECE</td>
<td>641</td>
</tr>
<tr>
<td>PEACE OR WAR FOR THE FARMER?</td>
<td>644</td>
</tr>
<tr>
<td>By David Starr Jordan</td>
<td>649</td>
</tr>
<tr>
<td>POTATO PRODUCTION IN NEW YORK STATE</td>
<td>654</td>
</tr>
<tr>
<td>By E. V. Hardenburg</td>
<td>657</td>
</tr>
<tr>
<td>THE DISTRIBUTION OF EGG PRODUCTION</td>
<td>659</td>
</tr>
<tr>
<td>By James E. Rice</td>
<td>663</td>
</tr>
<tr>
<td>THE HISTORY OF THE HOLSTEIN IN NEW YORK STATE</td>
<td>666</td>
</tr>
<tr>
<td>By E. A. Powell</td>
<td>670</td>
</tr>
<tr>
<td>THE COUNTRY HOME</td>
<td>672</td>
</tr>
<tr>
<td>By D. S. Hatch</td>
<td>675</td>
</tr>
<tr>
<td>COMBINING FARMS</td>
<td></td>
</tr>
<tr>
<td>By R. H. Denman</td>
<td></td>
</tr>
<tr>
<td>THE STUDENTS' ASSOCIATION AND THE FUTURE</td>
<td></td>
</tr>
<tr>
<td>By E. L. D. Seymour</td>
<td></td>
</tr>
<tr>
<td>A DIVERSION FOR BUSY STAY-AT-HOMES</td>
<td></td>
</tr>
<tr>
<td>By Miss L. A. Minns</td>
<td></td>
</tr>
<tr>
<td>EDITORIALS</td>
<td></td>
</tr>
<tr>
<td>CAMPUS NOTES</td>
<td></td>
</tr>
<tr>
<td>FORMER STUDENT NOTES</td>
<td></td>
</tr>
</tbody>
</table>
SPRING IN ALL HER GLORY
ON the seal of the federal department of agriculture are these words: "Agriculture is the foundation of manufacture and commerce." The foundation of agriculture is security and justice. When these are taken away, as they are in war, the whole fabric, dependent on the farmer, is destroyed.

The American farmer of today is wondering what the war is going to do to him. Temporarily, it raises some prices; also it has lowered others and has closed markets to him. Permanently, there is only loss, for the farmer of America gains nothing through the loss of the farmers of Europe, because whatever harms the prosperity of one part of the world harms all. For some of the products, for a short time, the American farmer may get a little more; but when a million men are killed their demands on their fellowmen cease and the market for the things they need dies with them. Right now two great staples are almost unmarketable: cotton is a drug on the market; potatoes do not move from the farm cellar.

Then, too, war takes money, and money which goes for ammunition cannot be spent for food. Whoever buys of the American farmer must have the price of the purchase. In war there is no demand for luxuries; California fancy fruit goes begging in European markets. Albermarle pippins from Virginia are no longer the fashion in London. No one thinks of buying them when the continent is burning, and when cheap food is sought because the costs of war are so dear.

Contrast those countries which have known peace and security and those which have not.

For the other extreme we may go to another land, Macedonia. It has been civilized for more than two thousand years. It has been a Christian land since the days of Saint Paul, who wrote an epistle to the church of its capital city, the Thessalonians of his day, now the people of Thessalonika.

Aristotle was born in Macedonia, and so, alas, was Alexander the Great. On its field of Philippi Roman freedom went down, with Brutus and Cassius, before the imperialism of Caesar and Antony. And since the days of Alexander and Caesar, Macedonia has not known security or justice. It has known the march and countermarch of war. Romans, Greeks, Turks; Turks, Greeks, Romans, Bulgarians, Servians, Italians, and Greeks.

The soldier and the farmer, the two cannot occupy the same lands. The soldier stands for might and violence.
perialism against democracy. It is the expression of the theory of those who think that some men and some nations are good enough to rule over other men and other nations against their will. All wars have their origin in the wicked passions of men, but mainly in these two,—arrogance and greed. No nation can make money out of any war, and no nation that begins a war can tell how it will end. So long as those interested in the manufacture of arms and armor plate, or interested in the loaning of money to maintain fighting are in control, just so long will there be war, and the farmer will pay for it. "Agriculture is the foundation of manufacture and commerce." The farmer, therefore, is at the basis of prosperity, and it is bad for the whole world when things go ill with the farmer.

"Fall to each what'eer befall
The farmer he must pay for all."

POTATO PRODUCTION IN NEW YORK STATE
BY E. V. HARDENBURG

The importance or extent of production of almost any farm crop for a given region is determined largely by a combination of factors such as climate, soil, topography, economy of production as influenced by competing crops and nearness to market. A study of these factors in so far as they bear upon the potato crop in New York State will serve to analyze our present status of production.

A rough survey of the state as a whole reveals five fairly well defined regions in which the potato crop forms a very important part of the rotation. These may be designated as: (1) the central southern tier of counties with Steuben County leading; (2) Monroe County with the central western New York counties bordering it on the south; (3) the St. Lawrence and Champlain Valley region in Franklin and Clinton counties respectively; (4) the Hudson River valley region consisting mainly of Washington and Rensselaer counties; and (5) Long Island.

With the exception of the Hudson River district all of the above have been surveyed within the past two summers in order not only to determine the problems which confront the grower but also to find out the actual cultural practices as factors influencing production. The work has already brought to light many things which heretofore have not been considered as worthy of serious thought.

It is only within the past three years that New York State has been superseded either in acreage or production by the states of Michigan, Wisconsin and Minnesota. Census figures for both 1899 and 1909 show a first rank for the Empire State in both acreage and production among the states of the Union and the following figures indicate that whereas the acreage has remained practically stationary, the yield has increased markedly.

**TABLE I.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Acreage</th>
<th>Production</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1899</td>
<td>395,640</td>
<td>38,060,471</td>
<td>15,019,135</td>
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<tr>
<td>1909</td>
<td>394,319</td>
<td>48,597,701</td>
<td>20,338,766</td>
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More bushels of potatoes* are produced annually in New York State than of any other single crop and with the possible exception of apples, as a crop, ranks first in total value. As indicated in Fig. 1, there are now just twenty counties which produce over a million bushels including two

*1910 Census.
which produce over three million and two which produce over two million bushels annually.

A question which very logically arises now is, what are the reasons for the location of the growing areas

The ideal potato soil is usually defined as a warm, free working loam of medium texture, relatively high in humus content.

A study of soil conditions in each of these five regions shows that with

as indicated in Fig. 1 or which of the above determining factors are most active? This question can be only partially answered by saying that while one condition is influential for one section, it may not be at all important in another. Before deciding upon the advisability of growing potatoes in any given region it should be borne in mind that this is usually considered an intensive rather than extensive crop and one which may be expected to net a profitable yield in return for a relatively large expenditure for seed, fertilizer, cultivation, spraying, harvesting and marketing. It is equally true that when limiting factors such as soil, climate, topography and proximity to market are unfavorable just as great a loss may result.

the exception of the territory about Monroe County and the St. Lawrence and Champlain districts, the potato soils of the state are not especially high in fertility. The bulk of the Long Island crop is grown on the Norfolk series of soils, a series which being of a sandy nature is comparatively low in humus and potash. The soil on which most of the crop of the southern tier of counties is grown, is that, of the Volusia series which, though of a desirable texture is not high in natural fertility. The crops grown on the Vergennes and Mountain soils in Franklin and Clinton Counties show that these are not limiting factors of production.

It is generally recognized that climate is more influential on produc-
tion than soil for the reason that yields obtained in the more northerly latitudes of Maine, England and Scot-
land exceed our own. The normal yield of potatoes is cut down almost in direct proportion to the number of days of summer temperature during which the temperature goes above 85° F. Table II shows a comparison of the mean temperature in New York, Maine and Scotland for the months of June, July and August.

**TABLE II.**

<table>
<thead>
<tr>
<th>Region</th>
<th>June</th>
<th>July</th>
<th>Aug.</th>
<th>Yield per Acre</th>
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<tr>
<td>New York</td>
<td>65.0</td>
<td>70.0</td>
<td>67.0</td>
<td>125</td>
</tr>
<tr>
<td>Maine</td>
<td>61.9</td>
<td>66.9</td>
<td>65.0</td>
<td>210</td>
</tr>
<tr>
<td>Scotland</td>
<td>55.0</td>
<td>58.0</td>
<td>58.0</td>
<td>350</td>
</tr>
</tbody>
</table>

In practically no section of the state is the growing season of the potato crop cut short by frost except in Franklin and Clinton Counties. Here, though the growing season is of normal length, 150 days, conditions are such that the tops remain green until killed by freezing temperatures. Though yield may be slightly lessened on this account, the average for this section compares favorably with that of the state and that portion of the crop so harvested in a slightly immature condition is thought to be more vigorous when used for seed. Though the average length of growing season for the Steuben County section is given as 150 days, the actual number of days between planting and digging dates was found to be only 135. The 200 days of growing season for Long Island is the longest of any of the five regions.

Rainfall is a limiting factor to production in New York State occasionally in certain sections. It so happens that on the lightest soils, least capable of conserving moisture, such as those of Long Island, we find both the greatest average annual and growing season precipitation. It is thought that varieties of the Rural type, those having blue sprouts, are better adapted to withstand drought than those of the Green Mountain or white sprout type. This may account in part for the predominance of the former type in the sections of western New York where rainfall is somewhat lower. Table III* shows the average number of days of growing season, normal annual and seasonal precipitation for each of the main potato regions here treated.

In general it cannot be said that any one of these three climatic factors seriously handicap production for the state as a whole although naturally our average yield must be somewhat lower than that of Maine and Great Britain, Ireland and Germany.

With the exception of some of the southern tier counties, of which Steuben is typical, the topography of the land is level enough to allow of intensive methods of cultivation and the employment of special machinery. Planters and diggers are used quite generally except in limited areas in the St. Lawrence, Champlain and Hudson Valleys where stony land makes it impractical. On the hill farms of Steuben county a digger of light draught, known as the Ross, is quite universally used instead of the more expensive and heavier type of chain elevator diggers. This consists essentially of a rotary reel which kicks the potatoes at right angles to the

*See November Cornell Countryman 1914. Climate of N. Y. in Relation to Agr.
rows. Much hand planting is necessary here also owing to the necessity of planting in checks to facilitate leading potato counties is approximately 10 to 15, it is quite common to find fields of 25 to 30 acres in the bet-

**TABLE III**
Days of Growing Season and Precipitation in inches

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
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<tr>
<td>Steuben Co.</td>
<td>May 10</td>
<td>Oct. 5</td>
<td>150</td>
<td>30-35</td>
<td>16-18</td>
</tr>
<tr>
<td>Monroe Co.</td>
<td>May 1</td>
<td>Oct. 15</td>
<td>165</td>
<td>30-35</td>
<td>14-16</td>
</tr>
<tr>
<td>Washington Co.</td>
<td>May 5-10</td>
<td>Oct. 1</td>
<td>150</td>
<td>35-40</td>
<td>16-18</td>
</tr>
<tr>
<td>Franklin &amp; Clinto Co.</td>
<td>May 10</td>
<td>Oct. 1-10</td>
<td>150</td>
<td>30-40</td>
<td>14-18</td>
</tr>
</tbody>
</table>

cross cultivation and weed control. Where land is relatively cheap and labor scarce as it is in this section it is considered better economy to employ more machine and horse labor at the expense of more land and less yield. Figure II shows a steep hillside planted to potatoes in Steuben County by the check row system.

With this exception most of the crop of the state is planted in drills necessitating cultivation one way only.

While the average acreage in the outer sections such as Suffolk County, Long Island. Figure III besides showing the vast extent of planting in such sections also shows one means of economy in production. Witness the spraying of seven rows with a single sweep of the sprayer.

Crops competing with potatoes serve as a natural check upon production in sections where conditions are otherwise favorable. For this reason relatively few are produced along the shore of Lake Ontario where fruit

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**FIG. III.** A 30 ACRE FIELD IN SUFFOLK COUNTY. SPRAYING OF SEVEN ROWS AT A TIME INDICATES THE ECONOMY OF PRODUCTION POSSIBLE.
growing is extensive and commands much time during the harvest season. For a similar reason, potato production is not prominent in the larger dairy sections of the state where much time would be required for harvest during corn cutting time. Again where retail milk production is possible it should be a more profitable business near the larger cities.

Although potatoes are not considered perishable for shipment, owing to bulkiness, the cost of transportation is often no small item in the cost of marketing. This is especially true of the corn crop grown in Franklin and Clinton Counties. In spite of this, however, environmental conditions render this section one of the most favorable in the state.

MEANS OF IMPROVEMENT.

Much is prescribed in the Agricultural press of late for a change in method of procedure. To the writer, it seems that the question is not so much that of when, and how to plant, cultivate, fertilize, etc., as how much to plant, cultivate, fertilize and spray. A study of the records of over 1,300 potato growing farms of New York State shows that with the exception of a number of farms in Suffolk County, too little seed is planted per acre, too little fertilizer applied and too little spraying done. In general the yield has been directly proportional to the extent of each of these practices. It is true that there is a point of marginal utility for each of these factors, but that point is seldom reached. Just as in any enterprise one reaps as he sows, it is equally true that those growers who get the lowest average price for their potato crop, spend, and can only afford to spend less in the cost of production. Owing in a large part to the lesser demand for a high grade product by local buyers and control of the marketing by those buyers of the greater part of the crop grown outside of Long Island, the farmers in these sections are receiving a considerably lower price for their potatoes than the growers on Long Island. In the latter territory, the cost of production is much higher owing to heavy expenditure in seed brought from Maine, in large amounts of fertilizer, in higher land value and in frequent spraying and cultivation. But yield and prices are correspondingly higher because of a better established market, a reputation for quality, a better graded product and a closer study of methods of production.

The only potato trucking section of any considerable extent is that of Nassau County, Long Island, from which the crop is hauled to the Wallabout Markets of Brooklyn on special wagons or motor trucks often as far as twenty-five to thirty-five miles. In this case the crop is sorted directly from the field into bushel hamper and sold direct both to retailers and wholesalers. In this way much of the middleman profit is eliminated. Fig. IV is a scene in the Wallabout Market of Brooklyn, the largest potato trucker's market in the state.

(Continued on page 678.)

FIG. IV. A SCENE IN THE WALLABOUT MARKET, BROOKLYN, THE LARGEST POTATO TRUCKER'S MARKET IN THE STATE.
PART III

What is the Most Reliable Method of Determining the Relative Laying Capacity of Fowls?

4. THE FIRST CALENDAR YEAR RECORD OF EGG PRODUCTION.

One full calendar year usually enables a fowl to do justice to her ability as a layer provided she gets started sufficiently early to make a 12 months laying year, before her production is interfered with or stopped by fall and winter climatic conditions. Much of course, will depend upon when the calendar year starts and stops and at how early an age a fowl commences to lay as to whether her first year is to be a reasonably correct gauge of her laying ability. The fact that cold fall weather in New York State and the molting tendency affects all fowls adversely and tends to check their production apparently is the cause for some of the less productive and later-to-commence-to-lay fowls to be somewhat handicapped the first year. If one will study the daily production of fowls of the same age that begin to lay earliest, he will find that generally they are the fowls that also lay latest the following fall and that unfavorable weather and the molting tendency eventually stops production of even the best ones in November or December.

5. THE RECORD OF EGG PRODUCTION FOR 12 MONTHS AFTER THE FIRST EGG IS LAID.

An examination of Figure 2* will show that only in a very few instances did a fowl extend her laying year beyond the calendar year. (October 1st or November 1st, following.) In such instances, a practical breeder would be justified in giving such hens the benefit of the few extra eggs that they laid in the "laying year" as compared to the "calendar year." The same would be true if we extend the laying year forward in the case of the individuals that may have begun their laying before the calendar year, October 1st or November 1st, begun. In the main, however, it would be wise to give every hen a 12 months period of laying from the date which she laid her first egg. In many instances such a course would extend the 12 months laying record to include one-half or more of the second calendar year record, which would, in effect, be an unfair advantage or disadvantage to the hens, depending upon when she began and ended her laying year record. For example, hens commencing to lay as late as February, March or April, as many do, would have their 12 months laying year and extend to the same date the following calendar year from the date when the first egg was laid. This would make as many different laying year records to consider as there are fowls to commence to lay on different dates and would result in confusion in undertaking to compare individual records and would not be likely to give as accurate a means of estimating a hen's laying capacity as it would be to use the calendar year commencing with the season when pullets normally commence to lay in the fall and ending at approximately the same time when hens cease to lay at the close of their laying year. This would be done with the understanding that the individuals whose record of laying is so extended that a 12 months calendar

*See CORNELL COUNTRYMAN, April, 1915, pages 567-569.
year would modify slightly her full laying year. It must be seen, therefore, that the possible injustice of a calendar year record of laying would be likely to affect only the higher producing fowls, which should be given full advantage of a 12 months laying year from the day the first egg was laid.

6. THE SECOND CALENDAR YEAR PRODUCTION.

Many high producing hens, notwithstanding the general law that the best hens usually make their highest records earlier in life, may be a little slow in starting to lay, or do not stress their production as heavily during the year and consequently make their best records the second year. Some of the high record hens of the first year, either because they lack the vitality or inherit a short distance laying habit, fail to maintain their early performance and make medium or low records the second year. A better estimate of these two types of hens is obtained if we use their 2 year or longer records. The second year record frequently brings to light some very high producing fowls that otherwise might be overlooked.

7. FIRST AND SECOND CALENDAR YEAR EGG PRODUCTION.

The yearly production record for three years shows that in most instances the hens that lay above the average production for three years have made their highest yearly production in either the first or second year. When hens have made their highest yields after the second year, the relative production in nearly all instances has been low to medium. Hence, the average production for two years appears to be more reliable than either the first or second year alone. The two year record appears to smooth out any extremes or exceptions in either year and gives a reasonably safe guide for estimating a hen’s laying capabilities. A combination of especially practical value to the commercial breeding requirements is to use the total production for the first 18 months after the first egg is laid, or the first 18 calendar year months from October 1st to April 1st which includes the entire year and approximately 6 months fall and winter production of the second season. This enables the breeder to select and use his best producing individuals when they are two years old without waiting until they are three years old in order to get two complete laying year records.

Figures 3 and 4 and Table VII-F* show how valuable the combined first and second year method is in estimating productive value of individuals. The difference between the average production for three years of the upper and lower ½ based on two years production is 151.00 against 90.24, or a difference of 60.76.

8. THE THIRD CALENDAR YEAR EGG PRODUCTION.

If the purpose in selection according to egg production is to discover the fowls that make the highest average sustained yield with the object in view of emphasizing longevity and the breeding of long distance records the third year is valuable. Many of the best first year producers decline in the second year and come up in the third year, with a larger egg yield than they made in the second year. It is of the utmost importance that these individuals be discovered. They show by their sustained high yield in the third year that they possess the inherited tendency of high fecundity and also that they have strong vitality to withstand the heavy strain of high egg production. The third year highest record alone, however, apparently, does not indicate the highest long distance producers quite as accurately as the first two years combined or the three years combined. The contrast between the highest ½ and the lowest ½ based on first and second year production as compared to the average based on third year production is as follows: 151.00 as against 90.24, or

*See CORNELL COUNTRYMAN, April, 1915, pages 567-569.


DISTRIBUTION OF EGG PRODUCTION

60.76; 149.06 as against 92.41, or 56.55.

9. THE THREE YEARS EGG PRODUCTION COMBINED.

The massing together of three years production gives what would appear from these dates a more reliable method of selecting fowls, determining their egg laying capacity than any shorter time method. A careful study of the ratings of the 63 hens shown in Figures 3 and 4 where the lines connecting the legband numbers of the hens clearly demonstrates the fact that production by eggs and distance by feet. We may say, if we choose to use the terms for the sake of illustration, that a fowl is a low, medium or high or very high or exceptionally high producer, or we may use any other appropriate adjectives in our attempt to distinguish between the productive value of individuals, the same as we may say that a building is low, medium or high or very high or exceptionally high, etc. One method of description is about as definite as the other. Extreme limits of egg production and of height of buildings

THE INTENSITY OF EGG PRODUCTION AS AN INDICATION OF PROLIFICACY.

Fifteen Single Comb White Leghorns at Cornell University selected from Sixty-three whose Records are known for three years or more.

<table>
<thead>
<tr>
<th>Leg No.</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>Total Eggs Laid in 3 years</th>
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<tr>
<td>Band No.</td>
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<td>Eggs Laid</td>
<td>Continuous</td>
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<td>5675</td>
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</tr>
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<td>7700</td>
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<td>5</td>
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<td>424</td>
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<td>7455</td>
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<td>9</td>
<td>107</td>
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</table>

the most consistently high, medium or low producing birds are found by tracing back the records for the average of three years combined. By comparing Figure 3 in which the three groups based on first year records are compared with Figure 4 in which 3 groups based on 3 year combined records are compared, it will be seen that there are fewest instances where hens rated as high, medium, or low by one method of rating are not found in the same or nearby group in the other seven methods.

Measuring and defining relative egg production is much like measuring and defining distances. We measure are increasing each year as man obtains better mastery of the science and the art of poultry husbandry and architecture and engineering. What constitutes a high egg yield or a high building will depend upon the particular standard of measurement that we have in mind. The meaning that we convey in our descriptive terms will depend upon whether we have in view exceptional individuals that have been carefully selected and cared for or the average of a large or small flock or farm flock, or whether we refer to the first or the second or the third or the fourth or any combination of years' production, or whether we have in
mind only individual rather than flock production, or, to make our comparison clear, in the case of buildings we might have a sky scraper in a metropolis or the highest building in a small city, country town or on a farm. The laying records of three different groups of Leghorn fowls, representing 270 individuals (Flocks 169, 63 and 38) for three years, might perhaps justify our assuming to suggest the number of eggs that should be laid per hen per year to fit suggested descriptive terms. Instead of assuming the responsibility for presuming to lay. The replies were given without any of the persons having an opportunity to confer with one another or with others or to consult records of production. The test was made with the idea of ascertaining how closely persons' opinions agree as to the meaning of certain terms when applied to egg production under the conditions named. It does not follow from this that a careful mathematical study of the production of large numbers of fowls would necessarily give results that would coincide with the yields quoted in connection with the de-

A SYMPOSIUM OF GUESSES AS TO A GOOD AVERAGE FLOCK EGG PRODUCTION PER HEN PER YEAR TO FIT DESCRIPTIVE TERMS INDICATING VARIOUS GRADES OF PRODUCTION.

<table>
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</tbody>
</table>

declare upon so variable a factor as egg production and take the chances of not having it, fit the opinions and meet the approval of any considerable number of poultrymen, the result of a survey of the opinions of persons is submitted. The descriptive terms as here quoted were submitted to persons, with the request that they name the number of eggs that a commercial flock of Leghorn pullets, kept under approved modern methods for commercial egg production, should lay. It was urged that each person try and express in his figures the number of eggs which the terms indicated to him a flock of fowls should be expected to lay. The replies were given without any of the persons having an opportunity to confer with one another or with others or to consult records of production. If one were to consider the production of individuals instead of flock averages, it would be necessary to increase the number of eggs to fit the same terms used in the tabulation above. So, too, it would be necessary to reduce the estimated number of eggs to fit the terms if one were considering the second year production instead of the first, or the third instead of the second, and so on, and a different set of estimates would be required to fit the terms if we were dealing with breeds of poultry having recognized higher or lower productive capacity than the Leghorns.
IO. THE INTENSITY OF EGG PRODUCTION FOR A SHORT PERIOD OF TIME.

The opinion has been advanced that the intensity of production; that is, the shorter the time in which fowls lay a given number of eggs or the more eggs they lay within a given short period of time, is the best method of determining their laying capacity.

By arranging the leg band numbers of the sixty-three hens under consideration in the order from highest to lowest in egg yield, as shown by each of the eight methods of measuring their performance which has been suggested, one may follow the records of each fowl through the table by drawing a line to connect the leg band number of each hen wherever it is found in the rating column. Figures 3 and 4 show graphically how two of the eight methods of rating may be compared with each of the other methods of rating.

These tabulations show, in the case of the sixty-three fowls under consideration, that the records for the first two years and for three years combined, appear to be the most reliable of the eight methods studied as indicating the productivity of Leghorns.

These and other data would indicate the wisdom of establishing at least four facts before assuming to compare the production of fowls. These four facts are first, the date the individual was hatched; second, the age when she laid her first egg; third, the number of eggs laid within a fixed time; and fourth, the environmental conditions surrounding the flock. The data would appear to show that if these four facts are ascertained one may secure a more reliable index of a hen's productive power than he would be likely to secure if he should use, as his standard of measurement, any fixed date during which the egg production of a flock might be compared without taking into consideration the date of hatching and the date the first egg was laid.

It would appear, also from the data that the longer the period of laying one takes in comparing fowls the more reliable will be the method of determining a hen's laying capacity. However, the value of the laying capacity of fowls as shown by any of the known methods of rating as an index of her breeding value can only be proven by a breeding test. The best we can do, with our present method of determining the productive capacity of birds, is to assume that the high laying capacity is the result of inheritance of high fecundity factors, coupled with the inheritance of strong constitutional vigor and that both of these factors may be influenced by environmental conditions that surround the breeding flock or their parents.

A summary of eight methods of comparing the laying capacity of hens for three years shows that the following factors are to be considered.

1st, the age at which pullets lay their first egg;
2nd, the production of pullets to March 1st;
3rd, the production of pullets to 10 months of age;
4th, the first calendar year egg production;
5th, the egg production for 12 months after the first egg is laid;
6th, the second calendar year egg production;
7th, the first and second calendar year egg production, or the average per year for two years;
8th, the third calendar year egg production;
9th, the three years egg production combined, or the average per year for three years, etc., for succeeding years;
10th, the intensity of egg production for a short period of one or more weeks at any time of the year.
THE HISTORY OF THE HOLSTEIN IN NEW YORK STATE

BY EDWARD A. POWELL

Director of the New York State Breeders' Association and one of the pioneers in Holstein work.

New York State is the foster home of the Holstein-Friesian breed, Holland the place of its nativity, and Massachusetts the place of its landing and first footing on American soil. New York soon became its foster home, the place of its development, its growth and reputation in America and for the past 35 years has been and still is the center of breeding interest in the black and white breed.

There have been many excellent breeders in New York State, too many to mention in a short article like the present, but a sketch of the breed can hardly be written without mentioning the names of a few leading breeders. In 1869 Hon. Garret S. Miller made his first importation of three grand cows, and a bull. These probably did more for the reputation of the breed at that period than any other herd, because he was the first to keep and publish the yearly, and for a series of years, accurate records of each cow.

His cow, Dowager, was recognized as the first to make an authentic record of 12,681 lbs. of milk in a year. This was soon surpassed by Crown Princess, of the same herd, which gave 14,027 lbs. This record was surpassed by Maid of Twisk with over 15,000, a famous cow owned by the Unadilla Valley Association. Next Lady Clifden came into prominence by increasing the last mentioned yield. Aegis followed this with 16,823 lbs.

Aaggie with 18,004 lbs., Aaggie 2d, 20,763 lbs., Echo over 23,000 lbs. Clothilde 26,021 lbs., and Pietertje 2d, 30,538 lbs. The above from memory, but which I think are about correct, including the world's record cows in the order named, up to the great record made by Pietertje 2d, and which has only been equalled by one cow to date, and that very recently. The above are records of mature cows, each being the world's record when made.

In the younger classes were Netherland Duchess 22 mo., 12,200 lbs. Netherland Queen 2 yrs. Jr., 13,574 lbs. Aaggie Constance 2 yrs. Jr., 16,761 lbs. Aaggie 2d, 2 yrs. 17,746 lbs. Albino 2d, 2 yrs. Jr., 18,484 lbs.

In the three year class I do not recall all the largest, but Clothilde gave as a 3 year Jr., 15,622 lbs., the world's record at that time, and Clothilde 4th as a 3 year Jr., 16,457 lbs. In the 4 year old class the leaders of their time was Clothilde 17,570 lbs., Netherland Belle 19,516 lbs., Clothilde 2d 23,602 lbs., and Millas Pieterje (or Pietertje 3d) 24,126 lbs.

These are the leading world's milk records made previous to 1891. All but one of them were made in New York State. Many large records have since been made by numerous breeders, too many to admit of individual mention here, but these of later date are generally fresh in the memory of the readers.

The breeders of New York State were the first to demonstrate to the world by both public and A.R. records that the Holstein breed was not only superior for milk, but also for butter. Among the leading breeders of the State at that early period were Hon. Garret S. Miller, the Unadilla Valley Breeders' Association, Smiths & Powell Co., Henry Stevens & Sons, T. G. Yoemans & Sons, J. B. Butcher, F. C. Stevens, and many others, who contributed towards the development and popularization of the breed.

When the fact was first promulgated that the Holsteins were a butter breed, the claim was received as a ludicrous joke, outside of the small circle who had
been convinced by actual tests made in their own herds. Even at this early date there were many weekly records of 25 lbs. up to 33 lbs. Mr. S. Hoxie’s system of Advanced Registry, adopted by the Holstein-Friesian Association, when that was organized by the union of the Holstein and Dutch-Friesian Associations, did much to encourage testing and convince the public of the accuracy of the records that were accepted and reported by the Association.

Mr. Hoxie is entitled to the thanks of all breeders for his persistent efforts in securing the adoption of the Advanced Registry system. The general public, and those who did not wish to know the truth were still to be convinced, and challenged public trials. The first good opportunity came at the New York Dairy Show at Madison Square Garden in 1887. It was claimed that 400 cows of various breeds and ages had been entered. *The Lakeside Herd entered Clothilde, 6 years, and Clothilde 4th, her 3 year old daughter, in the butter test, although with no idea of winning. This test resulted in a great victory for the Black and Whites. Clothilde won first, surpassing all cows of all ages and breeds excepting her daughter, by 26%, and the daughter exceeded all cows of all ages excepting her dam, by 6%.

There was a good joke attached to this victory. The President of the Jersey Cattle Club offered as a special prize, a beautiful cup. So sure was he that this would be won by a Jersey, that in advance, he had engraved thereon a beautiful Jersey cow, and the cup was kept under glass for exhibition at the entrance to the show. That cup is the most highly valued trophy ever won by the Lakeside Herd.

Another incident in connection with this show, gave the breeders of Holstein cattle courage and confidence. It had been loudly acclaimed, both in private and public, that Holstein butter lacked flavor and grain, and even if the amount produced was large, the quality would be inferior. Several prizes were offered at this show for butter, to be judged for its quality, flavor and grain. An expert was brought from Boston to do the judging. Mr. Isaac Otis, a veteran breeder of this State, was appointed Superintendent of this Department. A large number of samples in various forms were entered for these prizes, and a room was assigned for this exhibit. After the assembling of these exhibits, Mr. Otis went over every package, removed every label or mark of any kind that would designate the maker, or the breed from which the sample was made. He then called in the expert, locked the door, and let him proceed with his task. After the awards were made, Mr. Otis invited the expert to lunch where the qualities of the different breeds were discussed. The judge made the statement to the different parties at the table, that it was possible that the Holsteins might make a large amount of butter, but the quality would be

*The Lakeside Herd of Syracuse is owned by Mr. Powell.
inferior, the grain bad, and it never could be considered first class. This gentleman was not aware at that time that he had just given first and second prizes in some of the classes, where there was large competition by the various breeds, to Holstein butter. Since this occurrence very little has been said regarding the quality of butter made from this breed.

Another opportunity came when the Pan American at Buffalo, offered $1,000 in three prizes, for the best butter records made on the ground. Various entries were made, and the exhibits were on the grounds, but for some reason, all but the Holstein-Friesians were withdrawn. The Lakeside Herd again won 1st and 2d prizes of $900.

The next favorable opportunity came when the New York State Fair offered prizes for herds or groups of cows, (if I remember correctly there were to be four or five from each herd) and the prizes were for both quantity and quality, Henry Stevens & Sons won the 1st prize over the Jersey and other breeds.

By this time the public began to be convinced of the superiority of the Holland cow for butter production.

The first Holstein Herd Book was published in 1872. The first Dutch Friesian in 1880.

In 1880 the place of holding the Annual Meeting of the Association was changed from Boston to Syracuse, a charter was asked for from the State of New York and granted, under which the annual meeting must be held in this State. With few exceptions these meetings have been held in Syracuse, until by a recent amendment, the Association can hold every alternate meeting in the West. Syracuse will have the next meeting in June.

On April 16th, 1885, at Buffalo, the Holstein and Dutch-Friesian Associations united and formed the Holstein-Friesian Association of America, since which time this has been the authentic name, although many still use the name Holstein for brevity.

For probably 30 years New York has had a much larger number of members in the Association, has owned a much greater number of cattle and made many more A.R.O. records.

From the Annual Report of the Secretary of the Association, and the Superintendent of Advanced Registry, I understand that New York has had for many years, about 40% or more of the total membership of the Association, and usually a similar per cent of A.R.O. records.

It will thus be seen that New York is, and has been for 36 years, the center of the Holstein-Friesian breeding interest in America, and is justly entitled to be called the Foster Home of the breed.

![Netherland Duchess](image)
I COME to talk with you tonight about a very familiar subject, the farmhouse and home as it stands back there on the country road. We know country homes in different places, and those of us who come from the open country know that there is among many farmers this common feeling, that the farm home is the non-practical end of the farming project, that while it pays to have good horses, tools, and machinery for the farm, for the home anything much more than just a place to sleep in short nights does not pay. The house belongs to the woman anyway, let her take care of it. The man has all out-of-doors to look after and be interested in.

Just by way of illustration: against that common feeling let me tell you of a real country home, right over here within twenty-five miles of this platform, where the farmer feels and knows from results that a real home on the farm pays. But before I picture that home to you, let me emphasize that there is no show of wealth about it; that a home like it is within the reach of the common farmer; that it looks, as you drive by, the typical old-fashioned one and one-half story farmhouse. One of the reasons why this home is different from most country homes is the matter of re-arrangement, little changes to make the work easier, that the farmer has brought about at the suggestion of his wife. The Rural New Yorker recently gave this woman a good sum of money for a two-part illustrated description entitled “How we re-arranged the old farmhouse.”

Her husband purchased for her a little gas engine. This little engine is easily carried out-of-doors where it saws wood and turns different machines for the farmer himself, but it belongs in the home—it belongs to his wife. She learned to start it and she uses it whenever she needs to. This little engine pumps water from two cisterns in the cellar to an iron tank in the garret, and pipes leading from that tank and from the kitchen range make possible in that home a bath room well equipped. These pipes lead also to the washing machine, and the little engine runs the washing machine and the wringer, making it possible for that woman to wash there as long as she needs to by simply shifting levers, without muscular effort and without lugging a drop of water. The little engine also runs the mangle for ironing; it runs the separator, the churn, and the vacuum cleaner. The vacuum cleaner when purchased had a suction hose only fifteen feet long. For this the lady substituted a piece of common garden hose fifty feet long, now making it possible for her to reach any corner of the lower or upper floors—to clean that whole house in less than two hours. She washes her dishes in a dish washing machine.

In these, and other ways, relieved of the usual drudgery of the farmer’s wife, this wife and mother has been able to make there in all its departments a real country home—a home practical, practical in the first place because it has done away with that indoor labor problem. What need a woman with a home equipped like that worry if hired girls are as scarce as “hens’ teeth?”—hard to find and expensive to keep?

Homes like this are practical also because they become a factor in the outdoor labor problem, and you men know the size of that problem at the present time. Things are not as they used to be. Now the hired man has to work much of the time out there in
the field alone. Large numbers of hands used to be employed on the farm. Many of you men can never forget the march and music of the swinging scythes in the hay-field, periodically sweetened by the ring of the whetstone, the thud of the flails on the barn floor. There was always company there. Now the hired man feels the isolation of the country. The farm home is his home as long as he works there, and it is often the cheer and business atmosphere of the well-equipped, well-regulated home that is necessary to make him contented.

Again, the real country home is practical because it goes so far toward taking care of that much-talked problem of the country boy and the even more neglected problem, that of the country girl. The boy from that home I have described to you has just been graduated from an agricultural college and he is going back immediately with his young college-bred wife, and they are looking forward with pleasure to spending their lives there together on the old farm, in the old, well-equipped farm home. And that farmer will tell you that no keener enjoyment has ever come into his life than to sit there so many an evening, as he has, and see his young people and the young people from the countryside around and from the village, enjoying themselves together in his farm home.

A good country home is the only thing that can enable the country girl to choose her associates. The country boy, because he is a boy, enjoys an independence that the girl cannot have. He can hitch up any dark night, as we have done so many times, and drive as far as he will to find associates—or a single associate according to liking. With the girl not so. She cannot go, and here is the important point; there is often nothing about that home of hers that tends at all to attract associates of the right kind to her. She cannot go, she cannot entertain in her home. Back there on the country road, lonely, she exists.

And these conditions account for the results of that survey that has been taken in one of our counties. One thousand letters were sent out, one to every young woman in that county, asking these questions; “If not married, do you want a farmer for a husband? Please give reasons.” Three-fourths of the girls answered “No”, and the common reason given was: “Because we know how our mothers have slaved from dawn and before dawn until dark and into the night, and because of the barrenness of country-home life.”

And this brings us to another kindred reason why the real country home most richly pays. Have you seen that picture—Michael Flannigan’s home? the walls bare, the windows patched with paper, on the floor five or six small, hungry children, and in the center of the room his wife breaking her back over the washtub—Michael Flannigan’s wife—And the title of that picture is “All for the love of Mike.”

A little humor in the expression there, but no humor in the fact. Just as pitiful is more than one case I know, where for the love of a man a girl has accepted the sentence of becoming a farmer’s wife, the life-sentence to the back-kitchen—the sweatshop of the farm. Back there in the upper Hudson Valley, to the east among the lower foothills of the Green Mountains, on a farm I grew up. And at the same time, on another farm, two girls grew. We used to play together and talk together, and I remember we used to wonder just how things would turn out when we grew older. Four years ago one of those girls married an ambitious young farmer. He took her to a typical large farm, into a large farm house, with hired men to feed, lots of work, and the usual lack of equipment, and he is making good financially. But one day last fall I was taking some horses down to the horse show at the country fair and I saw driving down the road toward me what looked like an old woman on a milk wagon with a small child by her side. I had almost passed when I

(Continued on page 678.)
COMBINING FARMS
Results of the Combination of General and Dairy Types in New York State
BY R. H. DENMAN

WHEN two or more farms are combined and brought under the direct management of one farmer, there are important results. Fewer men and horses and less machinery produce the same amount of products. A greater portion of these products go to the city. The farmer makes a greater profit.

In this article are considered ten farm combinations or groups of this kind. Each of these groups comprises what was formerly two or more separate farms. "Farm Group," as here used, may be defined as those farms which are combined and farmed by one farmer with one farmstead as the chief center of operations.

The object in studying these cases of farm combination is to learn what gain in efficiency in the use of power and equipment is secured by combining. That is, to learn how much more work a man, a horse, or a machine does.

The general conditions on these farm groups may be briefly stated as follows: the farmer now in charge was, before combination, in charge of one of the farms of the group. He secured the annexed farm or farms either by purchase or money rent. He now farms the two, three or four, as the case may be, with only a little increase in labor and equipment above what he had on his first farm.

THE STUDY OF EFFICIENCY.

The accompanying tables give an analysis of the efficiency of men, horses, and machinery before and after combination.

In working up the material, due allowance was made for changes in the intensiveness of the farming. If hay replaced potatoes, adjustment was made to compensate for it. This was done by the method of "work units."

A work unit is the time required to raise and harvest an acre of hay, cut once. An acre of small grain requires two work units; an acre of potatoes twelve work units.* All comparisons, therefore, are made on the basis of "work size" instead of acre size. The acre size of the farm is the same in all cases, but the work size varies, being sometimes less and sometimes greater after combination. Tables I and II, column 4, show this, work size being shown by the number of work units, the latter being computed from the kind and area of crops and the kind and number of productive animals.

To determine the relative efficiency of the two systems of management, we must know the number of units of work to be done in each case and the labor which is employed to do it; we must know the number of units of horse work and the number of horses used, and we must know the comparative amount of work that a given investment in machinery accomplishes.

Let us study the efficiency of farm group III, as given in the tables. In column 3 of Table I we find that 4.75 men were employed in farming the two farms when separate, but only 2.5 men were required after combination.

Although the work size of the group (column 4) decreased slightly, the total work units per man increased, which is the essential point. The same gain is shown in columns 7 and 8 in reference to crops alone. Turning to horse efficiency, Table II, we

*For a fairly complete list of enterprises and their corresponding man and horse work units, see "Farm Management," by G. F. Warren, pp. 350-354.

†Maneless qualifies is determined by dividing the total months of labor by 12.
TABLE I.—MAN EFFICIENCY.

<table>
<thead>
<tr>
<th>Farm Group</th>
<th>How Worked</th>
<th>3 Farm Equivalent</th>
<th>4 Total Work Units</th>
<th>5 Total Work Units Per Man</th>
<th>6 Increase</th>
<th>7 Crop Work Units</th>
<th>8 Crop Work Units Per Man</th>
<th>9 Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 125 acres and 116 acres</td>
<td>Separately</td>
<td>7.16</td>
<td>973</td>
<td>136</td>
<td>469</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II 62.5 acres and 53 acres</td>
<td>Separately</td>
<td>2.90</td>
<td>437</td>
<td>151</td>
<td>217</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III 160 acres and 117 acres</td>
<td>Separately</td>
<td>1.80</td>
<td>378</td>
<td>210</td>
<td>167</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV 130 acres and 60 acres</td>
<td>Separately</td>
<td>2.50</td>
<td>624</td>
<td>250</td>
<td>404</td>
<td>162</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V 190 acres and 143 acres</td>
<td>Separately</td>
<td>4.00</td>
<td>717</td>
<td>179</td>
<td>409</td>
<td>102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI 90 acres and 100 acres</td>
<td>Separately</td>
<td>3.50</td>
<td>630</td>
<td>180</td>
<td>389</td>
<td>111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII 190 acres and 118 acres</td>
<td>Separately</td>
<td>5.00</td>
<td>884</td>
<td>177</td>
<td>427</td>
<td>85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII 308 acres and 98 acres</td>
<td>Separately</td>
<td>2.75</td>
<td>425</td>
<td>154</td>
<td>214</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IX 90 acres and 118 acres</td>
<td>Separately</td>
<td>2.00</td>
<td>418</td>
<td>209</td>
<td>223</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X 90 acres and 100 acres</td>
<td>Separately</td>
<td>5.50</td>
<td>606</td>
<td>121</td>
<td>356</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39%</td>
<td>43%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The total number of cows and young stock was reduced from 35 to 21 upon combining.

find that the number of horses on the same area is reduced from 8 to 5 upon combining. Although the total horses' work decreased, the work performed by each horse increased 33%. This means that the horses worked more hours per day on the average throughout the year. Considering the same farm group, we see in Table III that when the two farms were united into one, the amount of machinery was reduced 33%. In column 6 the horse work units per $100 worth of machinery is shown to have increased 25%. This means that the horses are working the machinery harder; that is, a mower cuts more acres of hay and a plow turns more land since the farms have been combined.

The average of these ten groups shows that, when two relatively small farms are combined and run as one large farm, a man does 39% more productive work in a year. Under the same conditions a horse does 72% more productive work in a year. The amount of machinery was reduced $435 worth or 23% on the average, the remaining machinery then doing 56% more work.

REASONS COMBINATION CAME ABOUT.

Some of the reasons why these farmers secured additional land appears to be:

1. Because their labor distribution was poor; they had quite a large amount of stock, but not enough work to employ the men all day or...
all the year. Hence they could work the extra land with little or no increase in labor expense.

2. One or two extra horses was all that was necessary in any of the cases studied.

3. No extra investment in machinery was necessary in most cases.

This practice of combining farms shows the increasing efficiency of the farmer due to labor saving machinery and scientific methods. It has been going on for many years in the older parts of the country. Old house and barn sites on many farms are evidence of this. Deeds often show that combination has taken place long before. Inspection of the farm might show no evidence of it.

**TABLE II—HORSE EFFICIENCY**

<table>
<thead>
<tr>
<th>Farm Group</th>
<th>How Worked</th>
<th>No. of Horses</th>
<th>Total Work Units</th>
<th>Total Work Units per Horse</th>
<th>Increase</th>
<th>Crop Work Units</th>
<th>Crop Work Units per Horse</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 125 acres</td>
<td>Separately</td>
<td>6</td>
<td>505</td>
<td>84</td>
<td>441</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 116 acres</td>
<td>Combined</td>
<td>6</td>
<td>500</td>
<td>84</td>
<td>441</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II 62.5 acres</td>
<td>Separately</td>
<td>7</td>
<td>256</td>
<td>36</td>
<td>227</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 53 acres</td>
<td>Combined</td>
<td>4</td>
<td>221</td>
<td>55</td>
<td>192</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III 160 acres</td>
<td>Separately</td>
<td>8</td>
<td>579</td>
<td>72</td>
<td>524</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 117 acres</td>
<td>Combined</td>
<td>5</td>
<td>482</td>
<td>96</td>
<td>453</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV 130 acres</td>
<td>Separately</td>
<td>6</td>
<td>363</td>
<td>60</td>
<td>325</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 60 acres</td>
<td>Combined</td>
<td>5</td>
<td>342</td>
<td>68</td>
<td>311</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V 190 acres</td>
<td>Separately</td>
<td>8</td>
<td>597</td>
<td>75</td>
<td>541</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 143 acres</td>
<td>Combined</td>
<td>5</td>
<td>553</td>
<td>111</td>
<td>521</td>
<td>104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI 90 acres</td>
<td>Separately</td>
<td>5</td>
<td>230</td>
<td>46</td>
<td>207</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 100 acres</td>
<td>Combined</td>
<td>4</td>
<td>257</td>
<td>64</td>
<td>231</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII 190 acres</td>
<td>Separately</td>
<td>9</td>
<td>417</td>
<td>46</td>
<td>384</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 118 acres</td>
<td>Combined</td>
<td>6</td>
<td>472</td>
<td>79</td>
<td>432</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII 308 acres</td>
<td>Separately</td>
<td>9</td>
<td>518</td>
<td>58</td>
<td>467</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 98 acres</td>
<td>Combined</td>
<td>6</td>
<td>721</td>
<td>120</td>
<td>662</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IX 90 acres</td>
<td>Separately</td>
<td>10</td>
<td>389</td>
<td>39</td>
<td>360</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 100 acres</td>
<td>Combined</td>
<td>6</td>
<td>472</td>
<td>79</td>
<td>432</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 118 acres</td>
<td>Combined</td>
<td>6</td>
<td>472</td>
<td>79</td>
<td>432</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X 90 acres</td>
<td>Separately</td>
<td>13</td>
<td>440</td>
<td>34</td>
<td>395</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 100 acres</td>
<td>Combined</td>
<td>6</td>
<td>720</td>
<td>120</td>
<td>662</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 118 acres</td>
<td>Combined</td>
<td>6</td>
<td>720</td>
<td>120</td>
<td>662</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 98 acres</td>
<td>Combined</td>
<td>6</td>
<td>720</td>
<td>120</td>
<td>662</td>
<td>110</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AVERAGE 72% 75%**

*The main farm, 125 acres, is a retail milk farm; upon the purchase of the second farm it was necessary to buy another team.*

**CONCLUSIONS.**

The facts concerning these farms in Tompkins County, New York, bring out many points which are true for the same types of farms in other regions. Some of the more important of these points are:

1. Combining gives an increased efficiency in the use of (a) man labor, (b) horse labor and (c) machinery.

2. In the case of two small farms, the combining into one large farm permits the purchase of such machines as binders, which it was previously unprofitable to own.

3. When the first farm is large enough to use all kinds of machines profitably, it is possible to dispense
### Table III—Efficiency of Machinery

<table>
<thead>
<tr>
<th>Farm Group</th>
<th>How Worked</th>
<th>3 Value of Machinery</th>
<th>4 Amt of Machinery Dispensed With</th>
<th>5 % of Machinery Dispensed With</th>
<th>6 Horse Work Units Per $100 Worth of Machinery</th>
<th>7 Increase</th>
<th>8 Actual Machines Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 125 acres and 116 acres</td>
<td>Separately</td>
<td>$2700</td>
<td>$700</td>
<td>26%</td>
<td>19</td>
<td>25</td>
<td>39%</td>
</tr>
<tr>
<td>II 62.5 acres and 53 acres</td>
<td>Separately</td>
<td>600</td>
<td>100</td>
<td>17%*</td>
<td>32</td>
<td>96</td>
<td>25%</td>
</tr>
<tr>
<td>III 160 acres and 117 acres</td>
<td>Separately</td>
<td>750</td>
<td>(increase)</td>
<td>33%</td>
<td>77</td>
<td>26%</td>
<td>None</td>
</tr>
<tr>
<td>IV 130 acres and 60 acres</td>
<td>Separately</td>
<td>850</td>
<td>150</td>
<td>18%</td>
<td>49</td>
<td>14%</td>
<td>None</td>
</tr>
<tr>
<td>V 190 acres and 143 acres</td>
<td>Separately</td>
<td>1050</td>
<td>147</td>
<td>13%</td>
<td>26</td>
<td>30%</td>
<td>None</td>
</tr>
<tr>
<td>VI 90 acres and 100 acres</td>
<td>Separately</td>
<td>1124</td>
<td>147</td>
<td>13%</td>
<td>26</td>
<td>30%</td>
<td>None</td>
</tr>
<tr>
<td>VII 190 acres and 118 acres</td>
<td>Separately</td>
<td>1777</td>
<td>147</td>
<td>13%</td>
<td>26</td>
<td>30%</td>
<td>None</td>
</tr>
<tr>
<td>VIII 308 acres and 98 acres</td>
<td>Separately</td>
<td>2219</td>
<td>358</td>
<td>34%</td>
<td>50</td>
<td>117%</td>
<td>None</td>
</tr>
<tr>
<td>IX 90 acres and 100 acres</td>
<td>Separately</td>
<td>1924</td>
<td>147</td>
<td>13%</td>
<td>26</td>
<td>30%</td>
<td>None</td>
</tr>
<tr>
<td>X 90 acres and 100 acres</td>
<td>Separately</td>
<td>2724</td>
<td>147</td>
<td>13%</td>
<td>26</td>
<td>30%</td>
<td>None</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>$435</td>
<td></td>
<td>23%</td>
<td></td>
<td>56%</td>
<td></td>
</tr>
</tbody>
</table>

*Neither farm of this group had a full equipment of machinery before the combination. The 62.5 acre farm had $400 worth. The 53 acre farm had $200 worth.

with all machines of the second farm upon combining.

4. Combining may give a greater crop acreage per animal unit, which, in the case of dairy farms, gives a better labor distribution.

5. Combining is a profitable practice if the distance between the farms is not too great. If far apart, the time lost in going from one farm to the other, offsets all the advantages of combining. Neither should the area farmed be too great, because much time will be lost in going from the farmstead to the far fields. In New York State, survey study has shown that the most economical size is from 300 to 500 acres for dairy and general farms.

In general, there are many other advantages, most of which are also characteristic of large farms as compared with small ones.

In the first place, a two-man-sized proposition, is secured. A one-man farm is seldom successful.

As a result of a larger business, the boys are more apt to stay on the farm. They will not stay unless there is productive work to do.

With larger units, larger fields are possible. Experience has proved that large fields may be tilled with less effort per acre than small ones.

When a second farm is annexed, it generally brings with it, a tenant house. This is of great advantage in securing and retaining the hired man,
because it is then easier to secure a married man. A married man is generally a better worker and less apt to leave suddenly and at a critical time.

When a farmer purchases a second farm, he holds that much more land, from which he can secure the income from the rise in land value.

With a large business, there is also the advantage of more economical buying of seed, fertilizer etc., and the more economical selling of products.

THE STUDENT'S ASSOCIATION AND THE FUTURE

BY E. L. D. SEYMOUR, '09

BEING given this opportunity to present to the readers of the COUNTRYMAN, the case of the Students' Association, its purposes and its problems, I am going to do so along two lines. First, in the form of a brief report, "official" as it were, of the last meeting and the larger plans that have resulted therefrom; and second, in the form of a few personal observations and suggestions, the result of something over a year of active association with the organization. If, in addition to sketching its present status, I can also stimulate the expression of opinions as to its policy, activity, and the solution of its problems, I shall be more than satisfied. In other words, I want to urge free and candid discussion of the whole subject, either through correspondence with the President or myself or in the pages of the COUNTRYMAN. It is obviously impossible for all, or even the majority of the members to attend the annual meeting; under these circumstances the COUNTRYMAN is the only, not to say the best, medium for the exchange of ideas. And such exchange of ideas is essential to the growth and success of any organization designed to represent such a varied and scattered groups of individuals as the alumni of a college.

THE 1915 MEETING.

The Sixth Annual Meeting assembled about one hundred persons in one corner of the auditorium of Bailey Hall on the morning of February tenth. President C. H. Royce, after a brief address of welcome, introduced Dean Galloway whose address, appearing elsewhere in this issue of the COUNTRYMAN, was heard with great and attentive interest. A telegram from Mr. C. F. Boshart, regretting his inability to attend and address the meeting, was read, after which President Royce made his annual report.

Mr. Jared Van Wagenen, Jr., followed with a short talk along the same general lines, but full of his characteristic optimism and inspiration. Previous minutes were read and accepted. Nominating and Auditing Committees appointed, and the Secretary-Treasurer's report heard and accepted. The more important details of the latter may be summarized as follows:

Membership.

<table>
<thead>
<tr>
<th>Total signed members</th>
<th>553</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total signed members, 1914</td>
<td>461</td>
</tr>
<tr>
<td>Increase past year</td>
<td>92</td>
</tr>
<tr>
<td>Total paid members</td>
<td>419</td>
</tr>
<tr>
<td>Total paid members, 1914</td>
<td>380</td>
</tr>
<tr>
<td>Increase past year</td>
<td>39</td>
</tr>
</tbody>
</table>

Finances.

| Total receipts | $459 14 |
| Total disbursements | 393 13 |
| Balance on hand | $96 01 |
| Assets: Balance | 96 01 |
| Stamps | 1 58 |
| Total | $97 59 |
| Liabilities: Note due | $5 20 00 |
| Interest on same | 15 60 |
| Total | $535 60 |
| Deficit | $439 01 |

From this it should be noted that
the deficit of the Association has been reduced, since the previous meeting, from $745.28 to $439.01. On the other hand it was reported that less than 100 members had paid their 1914 dues of $1 and that $53 of the fund pledged at the previous meeting (representing the subscriptions of twelve persons) remained unpaid.

A motion then passed resulted in the appointment of Messrs. Brill, A. C. King and Webster as a "Program Committee," to confer with the Dean for the purpose of devising ways and means for the Association to actively cooperate in forwarding the work of the College. The nominating committee recommended the re-election of all officers, the ticket being unanimously elected.

The following resolution, offered by Mr. F. W. Lathrop, was adopted by unanimous rising vote: Resolved, that the Students' Association express to Director Galloway its appreciation of his attitude towards the development of the College of Agriculture and towards the work of the Association, and that it assures him its hearty cooperation in his efforts to advance the usefulness of the College and the agricultural interests of the State.

The meeting shortly after adjourned until evening, when the custom begun last year, of holding an informal reception for Alumni and Faculty was revived in a thoroughly successful and enjoyable manner. The Home Economics Department contributed not only the delightful accommodation of its Auditorium, but also a delicious supper which preceded most pleasantly some informal talks by Messrs. A. C. King, Samuel Fraser, Professor Stone and Director Galloway.

Following this, the Program Committee above mentioned had a long conference with the Dean, discussing various plans and laying the foundation for the developments that are thoroughly outlined in the newsletter that has already been or will shortly be issued by the College. Needless to say this radical step, by means of which the College is going actively to keep in touch with its alumni as individuals, is one that should be appreciated not only by the Association as a whole, which will be tremendously assisted by it, but also by the Alumni, themselves, since it will enable them more easily to combine and more effectually to work for the good of the College and the agriculture of the State.

WORK FOR THE ASSOCIATION TO DO.

In my opinion, personally that is, this plan will prove the making of the Association on lines of new, infinitely increased activity. No organization can exist, let alone accomplish anything, unless there is some definite part for each member to play, something to keep his interest alive and active. This, it must be confessed, the Students' Association has frequently lacked, save in a theoretical and patriotic sense—and theory and sentiment find it difficult to hold together half a thousand persons who see each other not oftener than once a year. The new phases of the work of the College will do this, and also will undoubtedly supply the incentive for an increased membership. Thus far only about six percent of the alumni have joined—presumably because it offered them no return and implied no definite duty. Within a few months this will be changed, and opportunity will be given every man and woman who wants to work for the College, to do so through the Association—and shall this not mean at least seventy-five percent of those who have attended the College and partaken of its gift?

It occurs to me that the best results may eventually be obtained by breaking the Association up into local units,—county or even town—each of these to hold monthly or more frequent meetings and to keep in touch through its secretary, with the secretary of the main body. Each group could send representatives to the annual meeting and have equal voice in the affairs of the Association, but
in addition it would have its own organization, its own local activities, and still be at all times ready for service in behalf of the College or the agriculture of State or Nation.

I believe also that the Association should become strictly an alumni body in name and make up, a change involving constitutional amendments which I hope to see presented and carried through at the next meeting. As a definite group of alumni it could be listed among the Associations in the University Register (where it cannot now be included) and it would be prepared and able to strongly urge, if not indeed to accomplish, the election from among its members of a representative to the Board of Trustees. Certainly the largest College in the University, with more than 10,000 alumni deserves such representation. An organized alumni body could bring it about in a manner worthy and destined to benefit all concerned.

Lastly, there is the question of finances. The debt, unavoidably assumed two years ago, has by hard, continuous effort been reduced to $420, but as long as any debt exists, the Association will be needlessly and undesirably hampered in its work. The exasperating thing about it is the fact that, if the 125 odd members who have signed but never paid their $2 membership fee would do so, and if the 400 and more signed and paid members would send in their dues for 1914, still due, the debt would be wiped out and the organization would be on a firm, effective basis, and there would be absolutely no need to solicit contributions and subscriptions from the loyal few who have time after time put their shoulders to the wheel in just such emergencies. So, too, if more of the alumni who were active and interested in the work of the College while undergraduates would come forward and join, the Association would soon find it possible to expend its energies, not in appeals and efforts directed towards the past, but in active, vigorous concerted work towards an ever brighter, more productive future.

**GREATNESS**

**HONOR** and shame from no condition rise:

Act well your part, there all the honor lies.

Fortune in men has some small difference made.
One flaunts in rags, one flutters in brocade;
The cobbler aproned, and the parson gown'd,
The friar hooded, and the monarch crown'd.

"What differ more (you cry) than crown and cowl?"
I'll tell you, friend! A wise man and a fool,
You'll find, if once the monarch acts the monk,
Or, cobbler-like, the parson will be drunk,
Worth makes the man, and want of it the fellow;
The rest is all but leather or prunella.—*Alexander Pope.*
A DIVERSION FOR BUSY STAY-AT-HOMES

BY MISS L. A. MINNS

Instructor, Department of Floriculture, Cornell University

Vacations are quite a fad nowadays. The idea that a change gives needed rest has obtained a firm hold in the popular mind. But for many persons it would seem as if the vacation is the happy time for which the remainder of the year is endured,—a sort of heaven of perfect rest and enjoyment compared with which all working days are vaes of tears and wildernesses of woe. Now vacations, properly approached and intelligently used, are good for many people; but diversions, those things which turn one aside from care and labor, are even better. They are the regular food of recreation to mind and body that nourishes and sustains, while vacations are the infrequent feasts, too often the orgies.

The popular diversions of the time, theater-going, dancing, card-playing, boating, golf, tennis, and others, are all good in their way; but for busy people who find full satisfaction in none of these, the diversion of gardening is to be commended as one of the best. A diversion it might not be to a market gardener; it would satisfy few farmers. A greater difference between the regular work and the recreation may be needed here. And incidentally, does not this reason in a measure account for the lack of artistic gardening about farm homes?

Here gardening ought to be done with ease as a natural thing; here examples of home decoration might be set for less favored localities; yet possibly the most helpful recreation for the farmer needs to be of some other sort, farther removed from his ordinary work. But the business and professional man, the housewife, and the student will find in gardening an open sesame to many joys.

Miss Green, in the introduction to her book on school gardening, says: "There is no hobby that may be so inexpensive; no subject of conversation less likely to become disagreeably personal; no topic offering better opportunity to give and take in the matter of experience than that of flowers. So it follows that a love of flowers tends to level class distinctions; to give openings for real friendliness based upon mutual interests among people whose business and environment may be vastly different. Moreover, the betterment that comes from any worthy hobby follows in the work of flower culture." Charles Dudley Warner testifies that "there is probably nothing which has so tranquilizing an effect, and leads to such content as gardening," while John Sedding says that "the enjoyments of a garden are not in proportion to its magnitude, but far more upon the degree of its culture and the loving care bestowed upon it." Quotations like the above might be multiplied indefinitely, and they are confined to the writings of no race or age, no region or occupation.

You have no time for gardening? Yes, you have, or you can have unless unreasonable demands are being made upon you. You can generally find time for what you most want to do; and if, added to the conviction that gardening is one of the best things that you can do, you yield to the subtle call of Nature when the birds return and the sap begins to flow in bare branches, you will begin at once to plan a garden. Bring to bear your efficiency in management, or your new time and labor-saving devices, and make them yield you frequent bits of leisure in the hours of light. Gardening belongs to the day. Then plan to use that time to travel far away in spirit from your routine work, though you may be near in body and
A DIVERSION FOR BUSY STAY-AT-HOMES

all too frequently summoned from your pleasureland.
You have no place but a narrow back yard, shaded by high buildings and inclosed by ugly fences? Just the place for your garden! From an upper floor of a big business block one could look down on the crowded houses of an old section of a large city. They seemed like respectable houses, but far from wealthy. The houses were rather small and dingy, the lots may not have known of its existence, but in the December sunshine it looked very attractive and proclaimed the deep enjoyment its owner took in it.

A little thought and observation will make clear the conditions you must meet in order to have a garden. There are methods for making big bare yards look cozy and inviting, and of making tiny lots look even larger. Unsightly objects can be screened, poor soil can be enriched, wet soil

very narrow, the fences very high, the business blocks near by very tall. As an oasis in the desert of bare yards appeared a neat little back-yard garden in formal arrangement, with box or other evergreen hedges and clean gravel walks. Probably no one could see it from the street, the neighbors drained. There are plants which thrive in the shade, and others which seem to prefer the glaring sun reflected from walls. There are plants which will bloom the first year from seed that you sow now. There are plant colors to harmonize with all your miscellaneous surroundings.

"BASKETS ARE PRETTY FOR THE PORCH,—PLACE AN EMPHATIC UPRIGHT OR SHOWY PLANT IN THE CENTER AND TRAILERS AROUND THE EDGE."

PLACE AN EMPHATIC UPRIGHT OR SHOWY PLANT IN THE CENTER AND TRAILERS AROUND THE EDGE.

PLACE AN EMPHATIC UPRIGHT OR SHOWY PLANT IN THE CENTER AND TRAILERS AROUND THE EDGE.
Though all gardening writers say plan early, do not think it is too late; start now.

You have no ground space? Well, never mind, you will be spared some discouragements. Have you a porch, or at least a few windows? Try window gardening, that form of plant culture which offers possibilities to more people than any other. For the porch or outside of windows make stout boxes, ten inches deep, eight to ten inches wide, and as long as your space requires. Fasten them securely to the house, support them on stout brackets fastened to the house, or on flat iron supports bent like big hooks to hold them. Stain them dull brown, or paint them dark green or the color of the house trimmings. Place in the bottom about two inches of coarse coal cinders, fill nearly full with sandy loam or good garden soil, enriched with rotted stable manure or some of the dried and pulverized manures on the market and which may be purchased from a seed store or sometimes from the florist.

If you want vines to help frame the window, plant a few seeds of some quick-growing annual like *Cobaea scandens* or Morning Glory. Two other classes of plants you will need; trailers or semi-trailers for the edges, and upright-growing plants for the main body of the box. Some of the upright plants may be low and bushy, others may be of more striking or emphatic form. For trailers, buy a few plants of German ivy or ivy-leaved geraniums. Visit the market, or consult a florist who handles bedding and box plants. See what is to be had before you buy, and plan carefully the color scheme for your box-garden. Plant carefully, firming the soil around the roots, leaving the surface of the soil at least one-half inch below the top of the box, water abundantly when needed, making sure that water soaks down to the bottom of the soil. Boxes in exposed situations will need water every day in bright or very windy weather, but in the shade, or in cloudy, damp weather, less often. How often and how much to water cannot be told, but must be learned by experience.

Baskets are pretty for the porch, too. Buy a wire basket, or make one of twigs in log-cabin style, binding together with copper wire. Line with green sheet moss which you can procure from a florist or gather in the woods on decaying timber or the ground. Then fill with good, rich soil, place an emphatic upright or showy plant in the center and trailers around the edge.

But it may be the only space you can spare in one window indoors. Do not say it is useless for you to attempt to garden. Choose one good plant if you have room for no more, give it a chance to live and grow, and watch it respond to care. Your room may be dry and dusty with variable temperature and poor light, yet in the wide range of plants suitable for house plants there are several with which you can succeed. Good seed and plant catalogues, which may be had for the asking, figure and describe many such, and give the most important cultural directions. Garden and household magazines present helpful articles. Several very good, yet inexpensive, books are easily obtainable; and with few exceptions, growers of plants are most willing to communicate knowledge gained through experience. There are no trade secrets. First, know the conditions you can give plants as to light, heat and air; choose the plant for your place, give it the best care you can, and then—enjoy it.

Perhaps it is an *Aspidistra*, cousin to the white Easter lily, though you might study long before you could trace relationship. Its shining ob-long-lanceolate, green or green-and-white leaves stand upright from a creeping rootstock that lies on the surface of the soil. They are the showy part, while the small lurid purble flowers must be sought at their pases.

Perhaps it is some member of the Sword Fern group, with arching pin-
nate fronds, beautiful in every stage of their unfolding. No flowers are found, but can you imagine any that would really improve a fern? The brown of the leaf stem and fruiting dots tones down the bright green. The soft-haired stolons creep out from the base of the plant and down the outside of the pot searching for new territory to colonize.

Perhaps it is only a Christmas cactus, leafless, with queer jointed green stems. It can endure much neglect, and pays off old scores with such a wreath of brightest red, beautifully formed blossoms for a few weeks in the dead of winter that it becomes the admiration of the neighborhood.

Or it may be just a thriving, ever-blooming geranium, despised by some because of its commonness, yet of much value. The color range of its flowers is wide. Choose for your surroundings.

Perhaps you do not want plants around at all seasons of the year. If for winter months alone, what better than bulbs? An unusual showing of flowers in a private house was of bulbous stock, managed entirely by the master of the house. Strong bulbs of good varieties were carefully selected and ordered early in the summer, potted up as soon as received early in the fall, placed to root in a cool, damp, dark place under the porch and left for many weeks until good root systems had formed. Then brought in the house, a part at a time, they were kept in subdued light in a cool attic

"There is no hobby that may be so inexpensive; no topic offering better opportunity to give and take in the matter of experience than that of flowers. It follows that a love of flowers tends to level class distinction."

Statistics show that approximately one in every fifteen hundred inhabitants of the United States attends some institution of higher learning. This means that the people of the nation, although perhaps they do not think of it in this way, are setting forward a select few to train and equip themselves to work for the betterment of the race. Bringing this thought nearer home: in the College of Agriculture there are registered over 1,500 regular and special students of whom 1,412 are men and 256 are women. These men are fitting themselves to play an important part in the development of our agriculture, that is, to help grow larger crops, to better marketing conditions, and to advance the social, educational and religious elements in country life. The young women have before them the opportunity of improving the conditions which the farm woman faces. The privilege of attending this University brings with it a great obligation to those who have made it possible for the fortunate young man or woman.

First of all the college student owes a great debt to the people of New York State for supporting this institution, to his parents for making the college education possible, and to the University itself. Space does not permit a discussion of the first two. Turning to the last, consider for a moment some of the ways in which the alumnus may repay his debt to his Alma Mater. His
activities should take three forms, first, loyalty to the institution, secondly, maintaining its good name and lastly, enlarging its usefulness. The University needs his financial support and therefore he should make an alumni pledge, for the University spends more on each student than he repays. In many sections, Cornell men have formed Cornell clubs. These should be supported. Before leaving, every student in the College of Agriculture should become a paid-up member of the Alumni Association and be prepared to take an active part in the workings of this organization. The alumnus should watch very carefully the development of the institution, keeping constantly in touch with the happenings here, so that when his support is needed, he will be in a position to help.

The success of the institution depends on the men it turns out into the world, and in order to give the best type, it must have the proper kind of men with whom to work. As it was so aptly remarked by the president of one university, "If you send me men, I will turn out trained men, but if you send me fools, I can only return educated fools." Thus, watch carefully for promising young people and then influence them in every possible way to come to college. Help others to enjoy the privilege you have enjoyed.

Finally make good in your chosen field. The college stands or falls by the success or failure of its products—those whom it has endeavored to train.

These are days of great perplexity to the seniors. Of course the question uppermost in mind is, "What am I going to do next year," and in most cases it is a hard problem to solve. In deciding the question, certain very essential points should be kept in mind. Is it a wise plan to accept the first position that turns up simply because it is a job and pays well? Also, should the graduate assume work with the idea that it is only a temporary position and that in a year or two he will change over to some other field which he thinks he likes better? In most cases, the answer is no. Probably, that which a man does the first few years out of college will exert a great influence on his ultimate life's work. Therefore if possible, the man should enter immediately the field that appeals to him most strongly, for men usually make the greatest success by doing that which they like the best. He should look further than the first year—the opportunities and future of the field must be carefully considered.

At the Senior Banquet, President Schurman made a very significant statement. He brought out the fact that whereas some years ago the idea uppermost in the minds of the students seeking positions was to realize the most financially, to-day, this has changed. Young men are thinking more of where they can be of the greatest service. This is a hopeful sign of the times. If a man likes his work and goes into it for all he is worth, he is the one who is in demand and who is called upon to fill the most important positions. In these days, it is not the man seeking the job—rather the job seeking the man. Consequently, no matter what occupation a man chooses, and no matter how many others are pursuing the same employment, he can feel sure that if he likes the work and goes into it, heart and soul he is bound to succeed.
CAMPUS NOTES

Soils Building Latest Struc-
ture to Be Com-
pleted on Ag. 
Campus.

With the completion of the Soils Building the New York State College of Agriculture according to heads of the department, can boast of the most modern building planned for Soils in the country, and practically in the world. It was designed entirely by the Soils Department and has approximate dimensions of 40 ft. by 120 ft. and will ultimately be solely occupied by the Soils Department.

The Elementary Soils laboratory, which occupies the west end of the basement, is uniquely equipped with Alberine stone topped desks, gas, water, and electricity. The store room, stock rooms, assistants' offices, ventilating machinery, and pneumatic water system are also located in the basement.

On the first floor is a lecture room seating 192 students, in addition to several offices. The second story is devoted to three large laboratories, offices, and reception rooms. On the third floor are modern laboratories equipped for research work. The fourth floor consists of a store room, a museum, and a dark room.

Home Economics Department to have Administrative Secretary. This new position on the administrative staff was instituted because of the rapid growth of the department and its consequent mass of detailed work. The new secretary will take the burden of the administrative work from those who are now at the head of the departments.

Mr. Oliver M. Olson, whose home was in Iowa and who has been in Washington, D. C., for the last five years, has been selected to fill the new position. While in Washington he was employed in taking the 1910 Census, and later was secretary to Congressman Haugen of Iowa. For some time he has been actively engaged in Y.M.C.A. work. He will act as secretary to the heads of the department, and will gradually take over the administrative end of the work, with special reference to its non-technical phases.

At a recent meeting of the University Administration Committee of the Board of Trustees, the action of the University Faculty was approved in requiring two years of military drill to take effect on the completion of the new drill hall, or at the beginning of the year 1916-17. At the present time the second year of military work is replaced by gymnasium work. When the new Armory is completed the old drill hall will be converted into a gymnasium according to suggestions by the Department of Physical Training.

Cornell soon to have Two Years Required Military Training.
Leslie Brown '16, of Brown Elected Elmira, has been elected captain of the 1915-16 Varsity basketball team by members of this year's squad. Brown, who has played forward on the Cornell team for two years, won first place in the individual standing of league scorers this season and was acknowledged to be the best forward in the league. He has also been placed on all of the first teams which have been made out from players picked from league teams by various basketball officials and mentors of the year.

Brown has played two full years on the varsity. While a freshman he played as star forward with the College of Agriculture team which won the intercollege championship during that season. He was picked as one of the forwards on Doctor Sharpe's all-intercollege team at the close of that season.

Last season, when Brown was a sophomore and was playing his first season as a member of the Varsity five, he was the second Cornell player in the individual standing, being headed among the Red and White players only by former Captain G. C. Halsted '14. This year Brown was second to McNichol, of Penn, during the greater part of the season, winning out over the Quaker players only in the last game of the season, played with Dartmouth. In a number of the league games played, Brown scored more points than all the other members of the team combined, and in the last two league games of the season he scored thirty-three points alone.

With a number of the first stringers and other members of the squad in the University next fall, the prospects are bright. In addition to Brown, Ashmead, Sutterby and Wilson will be back as well as Shelton and a number of substitutes of last season.

At a recent meeting of Frigga Fylge it was planned to form an honorary society for the women students of the College of Agriculture, the aim of the society being to form a closer bond between the faculty of the college and the women students. The members are to be chosen with regard to their scholarship, college loyalty and, in so far as they have had chance to develop it with regard to executive ability. The election is on a very broad basis and the members are chosen by the
two upper classes, a Faculty Committee and, after the first election, by the members from the society. Senior members of the society were elected April 14 and 15 and are as follows:

Hilma Bergholtz, Pearl Decker, Mabel Flumerfelt, Norma La Barre, Winifred Moses, Elizabeth Pritchard, Olive Tuttle, Anna Woodward. The members of the 1916 Class will be elected in May.

The Department of Miscellaneous Floriculture and the Notes. State Architect, Mr. L. F. Pilcher awarded the contract for the new greenhouses to the Wm. H. Sutton Company, and to the King Construction Co. of North Tonawanda.

Alterations costing $3,000, to the main corridor of Roberts Hall have finally been completed. Many changes were made so that the departments would be more efficiently located, and that the hallway would be freed of unnecessary waste space and obstructions. The library was moved to the basement of the Agronomy Building, and the Secretary's offices now occupy their old quarters. The Dean's offices were enlarged and the hallway was remodeled and painted.

The following officers were elected to the Floriculture section of the Lazy Club: S. B. Emerson '16, A. S. Hailbloom '16, and J. B. Clark '15, to the executive committee; and H. F. Smith '16, to represent the club in the Agricultural Association.

A site north of Beebe Lake, opposite the new agricultural heating plant, was chosen as the location for the new $15,000 University Observatory. Work on the new structure will begin in the near future.

Richard Fricke '17, of Ebenezer, has been awarded the Junior Scholarship of $75 of the Western New York Alumni Association.

The Animal Husbandry Department announces prizes of the Annual Cow Judging Contest as follows, E. E. Spencer, first; R. G. Jones: second; R. G. Doolittle, third; E. Bull, fourth; J. M. White, sixth; W. F. Spencer, seventh.

The April Assembly which proved so successful, the April Assembly of the College of Agriculture was held in Bailey Hall on April 22nd. D. S. Hatch spoke of a slight change to be made in the "Honor System" and asked for the cooperation of the student body in carrying out this change. E. C. Heinsohn as chairman of the assembly gave a brief history of some of our favorite songs; which was followed by a special program.

The men and women of the Agricultural Glee Clubs, dressed in the costumes of your grandparents, with C. W. Whitney '13, as singing master, presented "Ye Olde Time Singen Skule." Many old favorites were sung such as, "There's Music in the Air", "See'n Nellie Home", "Jingle Bells", "Old Folks at Home", "Auld Lang Syne" and "America." Following the singing of the "Evening Song", all adjourned to the cafeteria where light refreshments were served, and music and dancing enjoyed.

This year's festival to be held May 6, 7, and 8, being the tenth annual Music Festival under the auspices of the Department of Music, will of itself be the biggest and present the most notable array of artists, yet offered the University community. The programs include such names as Pasquale Amato, Lambert Murphy, the tenor who scored here at the 1914 Music Festival in the "role of Faust," Evan Williams, Florence Hinkle, Olive Kline Margaret Keys and Clarence Whitehill.

In the second and third concerts, in the former as soprano, in the Cantata offering of Thomas' "The Swan (Continued on page 684.)
FORMER STUDENT NOTES

Former Students—Your classmates are anxious to know what you are doing. Write today, giving us some information about your work. Also if you can employ a student on your farm during next summer, please let us know, as there are many seeking such positions.

CHARLES S. WILSON
COMMISSIONER OF AGRICULTURE OF THE STATE OF NEW YORK

'04, B.A.; '05, M.A.—Charles Snoon Wilson. It is with a great deal of admiration that we insert the name of a former editor of the COUNTRYMAN as the newly elected Commissioner of Agriculture of New York State. Professor Wilson, as he has been known to Cornellians for many years, was born at Hall, N. Y., and lived on his father's farm at that place until he entered Cornell in 1900. After finishing a classical course in the Arts College, during the fourth year of which he was editor of the COUNTRYMAN, he was appointed an instructor in the Department of Horticulture, giving instruction in courses in vegetable gardening. In 1907 the Department of Pomology emerged as a separate department and Professor Wilson was placed at its head where he remained until his recent appointment.

Commissioner Wilson is the second professor from the New York State College of Agriculture to hold that office within the last four administrations. The previous professor was Professor R. A. Pearson, '04, president of the Iowa State College, who received his appointment from Former Governor Hughes in 1908.

The newly elected commissioner has been spending a leave of absence at the home of his father, Senator Thomas B. Wilson, at Hall. He was scheduled to teach for the third term in the college. To date no successor has been found.

A resolution of the faculty sent to Professor Wilson on March 31st follows:—

"The Faculty of Agriculture desires to express its gratification at your appointment as Commissioner of Agriculture, which alike is an honor to Cornell University and to the State. During the ten years that you have served as a member of this Faculty, you have grown constantly in the esteem of your colleagues and students. We believe that your character and personality, as well as your teaching, have had a large influence in moulding the lives of students.

"The worth of your work as Professor of Pomology is well known throughout the State. By your appointment as Commissioner of Agriculture the State will enjoy in a larger way the benefit of your training, judgment, and devotion to its agriculture and country life. The confidence which we, as your colleagues, now feel in you, will soon be shared by your new associates in the larger field of State Service.

"While we deeply regret your
leaving our Faculty, we rejoice that we are to have your continued counsel as a member of our Board of Trustees; and our heartiest well wishes go with you.

"The Faculty of Agriculture, Cornell University."

'75, B.S., '76, M.S.—Dr. Frederic W. Simonds, Professor of Geology in the University of Texas, completed on February 19, twenty-five years of continuous service in that institution. In commemoration of this event a large number of the friends of Dr. and Mrs. Simonds (Norma A. Wood, '75) tendered them a "celebration" on the evening of February 22, at the University Club in Austin and presented them with a handsome silver service. The March number of the Alcade, the University of Texas Alumni publication is dedicated to Dr. Simonds "for twenty-five years of unselfish service," and almost the whole of the magazine is devoted to the subject of his work at the university. A reminiscent article by Dr. Simonds himself is followed by more than thirty pages of letters of appreciation by his colleagues and former students.

'94, M.S., '95, Ph.D.—A list of new members of the American Society of Zoologists, just published in Science, includes the name of B. F. Kingsbury, Professor of Histology and Embryology in Cornell University.

'00, B.S.A.—Carl Francis Pilat after graduating from Cornell he spent a year in traveling in England, Germany, France and Italy. A portion of his time was spent at the celebrated botanical gardens in Berlin. From 1901-1906 he was assistant architect in the office of C. W. Leavitt, New York City. In 1910 he became a member of the firm and in 1913 he was appointed landscape architect to the Park Board of New York City. In connection with this he redesigned Union Square and designed Isham and Telewana Park. Mr. Pilat is a fellow of the American Society of Landscape Architects, member of the American Civic Association, and a governor of the Phi Gamma Delta fraternity, a member of the Glenwood Country Club, also a member of the City Club of New York.

'01, B.S.A.—D. L. VanDine was a visitor here a few days ago and gave a talk before the Jugatae. He is a graduate of the Dept. of Entomology and is now engaged in a special investigation of the relation of malaria to farming in the South.

'01, Sp.—Since leaving Cornell H. E. Crouch has been at the University of Illinois and is now manager of E. W. Mosher's farm at Aurora, N. Y. Mr. Mosher's farm is devoted to the raising of cattle.

'06, B.S.A.—W. G. Brielley writes "After graduation accepted the position of Horticulturist at the National Farm School of Doylestown, Pa., remaining there two years. I left there to assist in the establishment of a 30 acre apple orchard on the home farm at Stratham, N. H., and in the spring of 1909 I went to the State College of Washington as instructor in Horticulture, and remained there four years.

During that time I made a special study of fruit harvesting and marketing, obtaining the degree of Master of Science in 1913. I then accepted the position of assistant professor of Horticulture at the University of Minnesota, and have charge of the fruit and vegetable instruction, conducting practically all of the class work in those fields."

'06, B.S.—Ora Lee, jr., business manager of The Countryman, '05-'06, was connected with the Bureau of Soils, at Washington, D. C. from 1906 to 1910 in field work in soil surveying. Since 1910 he has been managing his father's farm at Albion, N. Y., under a four year rotation of potatoes, beans, wheat and hay. He has a small orchard and has recently set out an-
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Write for Prices

Potato Production in New York State
(Continued from page 648.)

Probably no state in the Union is more hampered with a large number of varieties than our own. In Steuben County alone, 360 farms were found to be growing 59 named varieties. In spite of this, 25% of the acreage was planted to Variety No. 9 in 1913. It is safe to assume that at least 50% of these could be eliminated without changing the type one iota and the reputation of the county be enhanced by so doing. Our markets have come to recognize the Green Mountain and Rural types as best for seed and culinary use. The sooner we can eliminate worthless varieties of types other than these, the sooner will the potato growers of New York State reap the benefits of a reputation established for reliability of pure seed and a uniform market potato.

The formation of a State Potato Association in 1913 and that of three local county seed or growers' associations since then has done and is doing much to eliminate varieties, standardize type, improve seed, eliminate disease and improve market conditions throughout the state. It is by this means that the great body of growers will be met and ultimate good come.

The Country Home
(Continued from page 658)

recognized the bride of four summers before, now pale, thin, haggard, worn, bent, and old looking. He is a successful young farmer; but what shall it profit a man if he gain the whole world of financial goods and lose that which money can never buy back again. He is the young farmer, and here is the advanced case that we also know so well in the country. They were taking the old farmer's wife away to the insane asylum and the old man said, "I can't see where she got it, for she hasn't been out of the kitchen for over twenty years."

But things need not be like this.

Where you saw it will help you, them and us.
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W. W. Buckbee, '16, Manager

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Read in the June issue of The Countryman

Capitalizing Character - - By T. N. Carver
The Pekin Duck Industry - - By G. F. Poggi
The Layout of a Farmstead - - By A. W. Cowell

SENIORS!

This issue will be of special interest to you for it contains a large cut of your class with a complete key. Subscribe now from a competitor and get the June issue FREE. Deliveries will be made May 30th.
Over in that first home I described to you, that farmer has kept his wife and she has done the work and brought up the children, and today she is just as fresh, healthy, and beautiful, even more beautiful in a sense, than the day he married her over twenty-five years ago. Now, to be honest, I have never tried it myself, but I should think that would mean something to a man.

Relieved of the usual drudgery of the farmer's wife, she has had the time and the spirit to make there in all its departments a real country home; to read and file away systematically the books and periodicals that have come into the home down through the years, to make there a good farm library; to arrange and keep a little room in which the farmer has his office. (Why should not a farmer have an office just as much as any other important business man? There is an old square piano in that home and some stringed instruments, and the two boys from that home, going out to two universities, had no trouble in making the Varsity musical clubs—one at Yale and the other here at Cornell. Does it seem just right that one has to search so far in the country, as you know he does, to find a man who is at all familiar with music, who sings, or plays an instrument. Men and women, these old singing schools in the school houses, which many of you remember and like to talk about so well, are gone, and it remains to the country home to develop the musical talent that lies latent back there among the hills of the open country.

Put a real country home, right in all its departments, down in the center of a rural community and do you think its influence is all within itself and its family? No, come with me around to the neighbors and I will show you a little improvement, here a little idea, that has been copied, forceful facts proving that the business farmers around here have been unable to dodge, seeing the real practicability.
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Where you saw it will help you, them and us.
of the real country home. Even the children of that home, at school and at play, become unconscious missionaries advocating such homes to all. The wife and daughters of that home become among country women an influence of immeasurable worth, having the time and the spirit to take their proper places in the life of the community; and on Sunday morning we shall no longer hear the mother say, "No, I am too tired to dress and go to church today."

Better homes will help to start again that line of teams that we used to see on Sunday morning going down to the country church. And the church service ended, we shall see that line of teams start back again and break up at the cross-roads, each family going to its own home—a home well equipped in all its departments—a home where the atmosphere is such as to make it easier to live out the ideals of life that that country church stands for—a home that pays, and the kind of home that is within the reach of the common farmer.

A Diversion for Busy Stay-at-Homes

(Concluded from page 669)

ed the house enjoyed the busy teacher's diversion, yet no one who had never tried bulb-growing could measure the recreation value which he received.

So, if labor is hard and cares weigh heavy; if vacation and recreation away from home is impossible; if money is limited and time to call your own uncertain, try gardening.

The objects of your devotion are inexpensive and easy to handle and care for. They will not compete with the other occupants of the home for the oxygen of the air, rather they add to it. They will not surprise the unwary from dark corners, nor place themselves as stumbling blocks in the way of hasty steps. They will not roam...
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all the filthy places of the neighborhood carrying home diseases and insects troublesome to man. They will not make night hideous nor break the morning's choicest hours of repose for a whole neighborhood.

They will be objects of high decorative value in your rooms, but they ought to be much more than that. Though they do not move about, nor indicate that they suffer pain at your neglect, they are living things, responding to stimuli of light and heat, and, in the words of Professor Duggar, carriers of leaf-green, the strongest link binding living things to the sun,—the one ultimate source of radiant energy available upon the earth."

They change every day and are full of the mystery of all living things, much nearer to the life of man than he willingly admits. The lessons that the inquisitive or thoughtful mind learns from them are many and deep.

Besides all this, they are objects of pure beauty, giving aesthetic pleasure by line, form, color, texture, fragrance. Their beautiful forms were the latest to be copied in decorative work as man emerged from savagery. Their use in design marks highest civilization; true appreciation of them, intellect, feeling, and culture.

**Campus Notes**

(Continued from page 674)

and the Skylark "and in the latter as soloist of the evening, singing among other selections, Meyerbur’s "Shadow Song", from Dinerah, Miss Olive Kline will make her debut to a Cornell Audience.

The Chicago Symphony Orchestra which will remain during the entire Festival is doubtless the best orchestra of its kind in the country to-day. University Organist J. T. Quarles and the Festival Chorus will also combine to make this the largest and best series of concerts that the Musical Department has ever presented.

The Agr. Baseball Team has started the season by winning from Architecture on April 20th, by the
score of 4 to 1, and by scoring 11 runs to Law's 5 on April 24th.

The Agricultural College Library is now situated in the basement of the Agronomy building. The capacity has been tripled and the seating capacity doubled. The library can now be used both as a reading room and as a reference room. The collection is at present made up from the Agriculture College, the University, and the late Professor Craig's library. As soon as the Plant Physiology department moves out of the building the whole basement is to be made into one large room.

The new heating plant pipe line, which is being installed from the new boiler house to the College buildings, is to be completed and ready for the test on May first.

The work is being done by John W. Danforth and Company of Buffalo. With the exception of one day, due to bad weather, men have been constantly at work since December 17. Cold weather was no handicap and the laying of concrete was carried on regardless of temperature.

The system will consist of a low pressure line for heating the buildings by steam, and a high pressure line for running the necessary pumps and machinery. The pipes, one of 10 in. for heating purposes, and the other of 4 in. for the high pressure, run directly from the new boiler house to Roberts Hall, where the steam will be distributed.

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Former Student Notes
(Continued from page 676)

other young orchard. Lee is seeding in some alfalfa every year with the idea of including this in the rotation by plowing it for potatoes as soon as it reaches its maximum growth at two or three years of age. Lee is a director of the Farmers' Mutual Insurance Company, of Orleans and Niagara counties and is active in the local grange.

'06-'07, W. A.—T. J. Caldwell after leaving Cornell, purchased a 100 acre farm in the fruit belt near Medina, N. Y. Besides being in the fruit business he grows wheat, corn and beans and keeps 200 hens.

'06-'08, Sp.—Edgar D. Reid has an 80 acre farm at Tennent, N. J. His chief cash crop is potatoes.

'09, W. C.—William C. Ford, Poultry Short Course '15, of Solsville, N. Y., is working as salesman in the Poultry Dept.

'08, B. S.—H. B. Rogers, is County agent, for the Farm Bureau Association of Chautauqua Co.

'07-'10, Ray L. Williams, of Cazenovia, N. Y., who was in Cornell is now in partnership with his two brothers on the "Old Homestead" and the adjoining farm, where they are breeding purebred Holstein cattle and Barred Plymouth chickens.

'10, W. C.—E. P. Smith has recently been appointed Farm Bureau Agent for Chenango Co.

'09-'10, W. C.—Virgil H. Tifft, of Laconia, Oswego Co., N. Y., is located in northern Oswego County, on a 100 acre farm, producing general crops. Potatoes and fruit are his specialties. It is planned to increase the farm and run a purebred Holstein business along with the fruit-growing.

'09, W. D.—Charles L. Kindelberger is manager of the White Springs Dairy Farm, at Geneva, N. Y.
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A Few of the Cornell Records

<table>
<thead>
<tr>
<th>Eggs laid</th>
<th>Eggs laid</th>
<th>Eggs laid</th>
<th>Total eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st yr.</td>
<td>2nd yr.</td>
<td>3rd yr.</td>
<td>laid 3 yrs.</td>
</tr>
<tr>
<td>Lady Cornell</td>
<td>258</td>
<td>200</td>
<td>191</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>162</td>
<td>159</td>
</tr>
<tr>
<td>Cornell Prolific</td>
<td>243</td>
<td>158</td>
<td>146</td>
</tr>
<tr>
<td>Cornell Laywell</td>
<td>205</td>
<td>165</td>
<td>159</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>165</td>
<td>146</td>
</tr>
<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
<td>178</td>
</tr>
</tbody>
</table>

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Prices

<table>
<thead>
<tr>
<th>Amount</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 lbs.</td>
<td>$2.25</td>
</tr>
<tr>
<td>75 lbs.</td>
<td>4.00</td>
</tr>
<tr>
<td>100 lbs.</td>
<td>5.00</td>
</tr>
<tr>
<td>200 lbs.</td>
<td>9.00</td>
</tr>
<tr>
<td>300 lbs.</td>
<td>13.00</td>
</tr>
<tr>
<td>500 lbs.</td>
<td>21.12</td>
</tr>
</tbody>
</table>

No orders filled for less than 40 lbs on this 60 trial offer. Never sold in bulk; only in Trade-Marked SAL-VET packages. Shipments for 60 days' trial are based on 1 lb. of SAL-VET for each sheep, hog, and 4 lbs. for each horse or head of cattle, as near as we can come without breaking regular-sized packages.

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THE MOST WASTEFUL MACHINE on the farm is a cheap, inferior or half worn-out cream separator.

THE MOST PROFITABLE MACHINE on the farm is a De Laval Cream Separator.

A CREAM SEPARATOR IS USED twice a day, 730 times a year, and if it wastes a little cream every time you use it it's a "cream thief," and an expensive machine even if you got it as a gift.

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Spoils No Crop By Packing

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Cook your meals with
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and make your acetylene with a
PILOT LIGHTING PLANT

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PILOT plants are approved by the National Board of Fire Insurance Underwriters.

All told, over 250,000 country homes are using Acetylene made the PILOT way.

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Such a plant is a permanent improvement and will furnish you with the cheapest, safest and most practical light and fuel now available for country home requirements.

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TABLE of CONTENTS

COVER—CORNELL CAMPUS — Photo by H. C. Cable
FRONTISPIECE—SENIORS IN THE COLLEGE OF AGRICULTURE
ON CAPITALIZING CHARACTER — By T. N. Carver 715
SOME PRACTICAL HINTS FOR CROP IMPROVEMENT
   By A. W. Gilbert 718
THE LAY-OUT OF A FARMSTEAD — By A. W. Cowell 720
HOW TYPES OF FARMING IN NEW YORK STATE ARE
   DETERMINED — By K. C. Livermore 723
THE PEKIN DUCK INDUSTRY — By G. F. Poggi 730
THE INTERCOLLEGIATE BUREAU OF OCCUPATIONS OF NEW
   YORK — By Julia S. Leaycraft 734
RECENT TRUSTEES MEETING BRINGS IMPORTANT DEVELOP-
   MENTS TO THE COLLEGE OF AGRICULTURE — 736
THE COLLEGE OF AGRICULTURE—A LOOK BEHIND US
   By B. T. Galloway 737
EDITORIALS — 738
KEY TO FRONTISPIECE — 741
CAMPUS NOTES — 742
FORMER STUDENT NOTES — 746
How can a farmer possibly get credit on easy terms unless he has a good basis for credit? This question is asked more frequently than any other by skeptics on the subject of rural credit. Of course, there is only one answer: he can not. But it is too often assumed by people who pride themselves on their hardheadedness, and who fail to distinguish between hardness and impenetrability, that the only good basis for credit is property or collateral. Great financiers have always seen deeper than this, but the rank and file of those who deal in securities, credits and collateral are not financiers of any kind, either great or small, though they imagine that they are. They are usually unable to see beyond the things which clutter their desks and fill their pigeon holes. To such men the suggestion that character may be a satisfactory basis for credit doubtless seems rather humorous.

The suggestion loses its humorous quality when we consider its fundamental importance. Unless honesty is, or can be made, an advantage in business, honest men can never win against rogues in business competition. The result will be that rogues can never be eliminated from business. It is difficult to see how honesty can have any advantage over dishonesty anywhere unless it be in the field of credit. Unless the honest man can secure credit on easier terms than a dishonest man, where does honesty pay? Of course, men ought to be honest whether it pays or not, but this kind of a preachment is not going to eliminate dishonest men from business. So far as collateral is concerned, a rogue may have it as well as a saint.

The possibility of making character a basis for credit is of peculiar and vital importance to our agricultural development. The men upon whom we must depend for the future expansion of our agricultural production have not much else. The well-to-do farmer, who has already accumulated a considerable fund of property, is not the farmer who is likely to clear and reclaim new land, and bring under cultivation the vast area of tillable land both east and west, north and south, which is still untitled. This gigantic task will be performed, if at all, by young men who have little except their hands and their pluck and determination. Such were the men who reclaimed and subjugated the lands now tilled, and such will be the men who reclaim and subjugate the lands still untitled. Such were the men who built the rural homes in which the best of our present population was nurtured, and such will be the men who build the rural homes in which the best of our future population will be nurtured. It is through such men that our financial interests must work if they are to be of any direct use to the agriculture and the rural civilization of the future.

The farmer who is to cultivate the present untitled area has one problem to face which did not worry the pioneer
farmer of the past, though the pioneer farmer had a good many which the farmer of the future will not have, that is, the problem of supplying himself with capital. Most of the land upon which a farmer could begin growing crops without a considerable preliminary expenditure of capital has already been brought under cultivation. That which remains requires such an investment as pretty generally to exclude the home seeker who has nothing but his own labor to invest. Unless some method can be found which will enable him to supply himself with the necessary capital, farming will cease to be an opportunity for the home seeker in America.

From the standpoint of the statesman, efficient production is more important than efficient bargaining. Something should be done, therefore, to put the small farmer, who has proven to be the most efficient producer, on an even footing as respects bargaining with the large farmer. If that can be done, we shall enable the small farmer to flourish, and through him we shall have the most efficient agricultural production possible.

One of the best ways to begin is to find some plan which will enable the small farmer to borrow capital on terms approximately as easy as those which the big farmer can secure. If the small farmer lacks both character and collateral, it is difficult to see how anything can be done for him. But if he possesses character, there is a way out of the difficulty.

By character is meant the possession of such economic virtues as industry, frugality, sobriety, forethought, and honesty. Let us suppose that a certain farmer, Jones by name, possesses these virtues, that he is willing to work and to save, that he is sober and forehanded, and that he will always pay his debts if he can possibly raise the money. But there's the rub: can he raise the money to pay a debt when it is due? If he can, it is safe to lend to him. If he can not, it is unsafe, no matter how honest he may be.

Here is where the banker may come in and amply justify his existence. It is not enough that he sit in his office and scrutinize the security and collateral of would-be borrowers. That is the job of a cashier, or some one without discretion who must follow fixed rules. It is the bankers's job to see that Jones has the money with which to pay his debt when it is due. By this is meant that the banker's function is to finance productive enterprise. That is what a good investor is. The banker, especially the country banker, ought to be a good judge of investments. There may be room for a finer differentiation of functions in a city, where some bankers may be financiers, and others are custodians of funds, to receive deposits, on the one hand, and lend them out on good security on the other. But a country banker must be both.

Now if our country banker is a good judge of investments—one who can tell what enterprises are likely to succeed and what are not, he can be of great service to Jones. That is where Jones is weak. He has probably had little training or experience in that direction. His experience lies in other fields. He may be an excellent judge of live stock, a good hand at growing corn, cotton, or wheat, but he has not, more's the pity, been trained in the keeping of cost accounts. His investments are therefore largely guess work. He thinks that he would like to have this or that,—a pure bred bull, a few dairy cows, some brood cows, a silo, and some tile for the drainage of his land, a new barn, etc., etc. If he could get the money, he would have them. But it is hazardous to spend good money for things which one only guesses may pay. It is, therefore, hazardous to lend money for such a purpose.

Now if the banker, with his expertness in the matter of investments, could form an alliance with Jones, with his expertness as a grower of crops, we should have an ideal arrangement. The banker should have studied for years the investments of hundreds of farmers in all the sur-
rounding country. He ought, therefore to have pretty clear ideas as to whether a silo will be money in Jones' pocket or not, whether a pure bred bull, or a herd of dairy cows, will provide Jones with enough money to enable him to pay back a loan, and leave him a profit besides. If so, it is safe to lend him the money. Being honest, Jones will pay his debt if he can possibly raise the money. The purpose for which he borrowed the money being a profitable one, he will have the money. And there you are.

It is, of course, much easier for a banker to sit in his office and scrutinize the notes offered, their security, or the collateral on which they are based. It is a much harder job to estimate Jones' character, and to determine whether it will pay Jones to borrow or not. But while this job is harder, it is infinitely better worth doing. Besides, the banker who performs this function will be an active builder of agricultural prosperity in his community. In the end, it will add to the prosperity of bankers because of the increased volume of business, and the greater wealth and prosperity of the entire community. After all, that is what banks exist for. Agriculture does not exist for the support of banks. Banks exist for the support of agriculture and other industries.

Bankers owe it as a duty to the country to see that the capital which they control gets into the hands of those who can make the best and most productive use of it, and that it is used for productive rather than for unproductive purposes. Suppose that on an irrigation project, water was used on poor land, where it would not produce much, merely because the owners were able to pay for it, while good and highly productive lands were deprived of water. That would clearly be a waste of good water. The total productivity of the project would be increased if the water were put where it would produce the most, that is where the land would respond most abundantly. It would be an equally bad waste of water if a poor farmer were permitted to use a quantity, merely because he was willing to purchase it, thus depriving some better farmer, who could produce more with it. Again, it would be a waste of good water if it were allowed to be used in the irrigation of crops which didn't pay, while highly profitable crops were suffering for water.

It is similarly a waste of good capital to allow it to be used by less productive men when more productive men might use it, or for a less productive purpose when it might be used for more productive purposes. The productivity of the would-be-borrower does not always depend upon the amount of tangible property or collateral he can put up as security, nor does the productivity of the purpose for which he wishes to use the borrowed capital depend upon that kind of security. In order to secure the maximum economy of capital, which is the banker's function, he must, therefore, look beyond the tangible security, and scrutinize the character of the borrower and the purpose for which he wishes to borrow.

The banker who secures an economic use of the capital which he controls is one of the most productive members of his community, contributing largely to its prosperity. The banker who does not secure an economic use of capital is a parasite, living off of the community, and contributing nothing to its prosperity.
IN order to secure the best crops at the least cost two factors must be considered—first the environment of the plants such as soil, cultivation, fertilization, protection from enemies and the like, and second, the seed must be bred for the particular purpose for which the crop is grown. If either factor is lacking, full production is not reached. Every grower should determine so far as possible what is the limiting factor in the growth of his crops, and improve that factor if possible. Since the quality or lack of breeding and adaptability of the seed is very often a serious limiting factor in crop production, the systematic breeding of seed for specific purposes should be encouraged among farmers. There should be one or more persons who are breeding seeds for each locality—seed which is adapted to those peculiar local conditions of soil and climate. Sometimes this seed must be grown elsewhere—farther north, perhaps, but all farmers should see to it that someone either in their communities or outside of them is breeding seed for their specific purposes.

Communities should determine for themselves the best varieties for their conditions and insist upon their further improvement. Varieties differ greatly in their adaptability to different soils and climates. Upon close examination, it is found that most varieties of our farm crops, in particular, are very heterogenous. This lack of uniformity in the crop is often a serious source of loss. The first improvement in a crop should consist of weeding out the poor types and propagating the best ones. This will quickly improve the average of the variety. After the variety has been purified by roguing out the worthless strains, a breeding patch should be started to test the best individuals and to continue to improve them, if possible. Each individual plant should be studied separately. If it comes up to the required standard, its seed should be saved and planted in a separate row so as to determine its ability to transmit its good qualities to its offspring. This constitutes what is called "pedigree breeding." The object of this method of breeding is to determine the superior plants which will give a strong vigorous offspring.

After these superior or "elite" strains have been secured they should be kept up to this high standard by continuous selection and roguing.

If one wishes to go further than this, crosses between desirable strains
may be made to secure a new race which may combine the best qualities of both parents.

No factor of farming needs more attention or offers greater possibilities than the purchase and production of pedigreed seed. It should be bought with the same care and study that the fertilizer or feed receives.

---

**FIRST STEP IN POTATO SELECTION:**

Good progeny of potatoes (on the right) and poor progeny (on the left). These were the beginning of good and poor strains respectively. Each four plates constitute the total product for one tuber.

In order to know all about the seed which you purchase, insist upon having the following information supplied to you before buying the seed:

- Kind of seed.
- Name of variety.
- Description of variety.
- Crop of.
- How long bred?
- By what method?
- Where grown?
- Conditions of culture under which grown.
- Kind of soil—rich, medium, poor.
- Altitude in feet.
- Summer rainfall in inches.

---

l. Date of planting.
m. Date of ripening.
u. Yield per acre.
a. Amount of disease.
p. Percentage of germination.
g. Percentage of purity.
r. Price.
s. Name and addresses of two persons acquainted with your business.
THE LAY-OUT OF A FARMSTEAD
BY ARTHUR W. COWELL, '03

As soon as it is noted that a landscape gardener has essayed here to discourse upon laying out the farm, immediately visions of flower beds and wriggly roads and red painted fountains will come to mind. It is doubtful if anyone will have courage to read further! That is natural enough for it is customary to assign to the landscape gardener all blame for those aesthetic flower beds so usually displayed in form of bent sausages—in strings or singly, stars, crescents and full moons to spoil pretty lawns; and roads that weary with useless turnings hindering rather than guiding us about our business. The best fountain to have around a farm is a fine clear grass-set spring, or a good clean cement water trough; the kind of flower bed, that which gives the greatest pleasure with least effort and expense; roads that are graceful, direct, and well built. In other words good landscaping on the farm is that which enhances appearances while helping the practical economics.

Legions of places we see that are quite devoid of any practical advantages but are irresistibly charming as pictures; on the other hand we often see places—buildings, fences, roads, and trees eminently practical, but not particularly attractive. It is not, therefore, possible to say that all which is practical is best. Beauty has an intrinsic value on the farms as well as in the city store or at the factory. It is hard for people to be contented under conditions which are not attractive and it is difficult for thinking, ambitious workers to labor along in any plant or with any tools which they realize are bad or not as efficient as should be—making the operation harder. These are undoubtedly factors in the problem of keeping the country boy and girl upon the farm. At the factory and the city store or office, order and system are aimed at and the surroundings are generally bright and interesting with the common things of life. These youths never were taught that the common things about the farmstead were far more interesting, when one gets to know them, than the common things in town. I refer to the breeds of insects and wild life, the breeds of the plants about the farm. We may not be able to educate all to a full knowledge of natural science but a course in nature-study may help present facts of which thousands of farm children never heard. City children often know more. The farm should try to impart this knowledge and foster a love of all this native and rural beauty and a love of the farm home. Attractiveness will help to accomplish the purpose. Orderly arrangement of buildings helps the work.

But to get down to our subject, it has been hinted above that the farm should be practical in its lay-out. The lay-out comprises the whole farm equipment of fields, woods, barns, home, roads and lawns. To be practical this lay-out should be of a nature to be easiest worked in. To be this it should be "farm planned." The principles are somewhat like to those of modern city planning. From practical considerations we may deduce the rule of centralization of buildings, so that the farming processes may be carried on with least amount of effort. The buildings should be easy to reach from the fields and thereby save expensive long hauls and ought to connect directly with a number of fields to further facilitate operating.

The different buildings of the farm serving different purposes should be close together in order to save steps and time in the daily rounds of farm work. It was figured out that a man saved enough time in one instance by a rearrangement of buildings to afford him a two weeks' vacation on the time
saved. But that his work had been made so much easier that he needed no such vacation, we are not told. There should be a sort of farm centre like a "civic center" of a model city where administration and education and life of the farm starts and ends. The buildings should form somewhat of a hollow square back of the house or to one side by at least 160 feet. The group should stand if possible to the windward of the house in order that any odors may be carried away from rather than toward the house by the splendid break when set eight or ten feet apart. Austrian and white pines, and Douglas spruce are also good. There ought to be two or three rows set for a good shelter belt. The economic and practical advantage of such a protective planting is too seldom realized by farm managers. Where it has the added snugness and comfort, it becomes an asset to the place, an influence of results in the farm work. Spruce and other trees for such breaks are to be had at very low prices from the big nursery firms of prevailing winds. From these winds upon the northwest, the "farm center" should be protected by a windbreak of trees. A good windbreak comprises trees which grow rapidly and some which come on more deliberately. The latter are the longer lived maples, oaks, spruces and pines. The quicker growers are white birch, white and lombardy poplars, white willow, larch, ailanthus; stag horn sumacs, etc. Of evergreens, Norway spruce grows fastest and makes a the country. It is an advantage to buy not too far from home, and to deal directly with the home office rather than the agent and his book of plates.

Somebody will ask how to locate the buildings of this group. The reply might be a long one, but which would get us to the conclusion that "circumstances alter cases." The barn may be an over-shot barn in which case it will be rather high upon one side, giving the cattle winter pro-
tection by the barn itself. The other buildings naturally find their places near-by from the nature of their uses. The dairy house needs to be near by the cows. There ought to be a tool house and place to repair and sharpen tools and do the odd jobs of the farm. To equip this properly, a small gasoline engine should find its place. The balance-beam of a farm scale should find its place properly in this little building, too, for all products received as well as those sent out, should be weighed at the farm. There might be a large corn crib of that type which allows of driving a wagon in between the two parts of the crib under roof. A trough for watering the stock is required and any other buildings that are useful for the day's work. The poultry plant may probably fall logically nearer the house than the other buildings for it is usually more or less a part of the domestic department or the plant, watched over assiduously by the women of the household. This then may, as shown in the accompanying plan, form their first part of the farm center. There should be at least thirty feet between buildings to help restrain fire from spreading.

The house may be considered the administration building of the farm plan. From it begins and ends the farm activity. It should never be farther from the farm center than necessary. Yet there is a human consideration in the matter of its location too. It should never be so far from the main high-road as to become lonely. Nor yet so close as to lose its sense of privacy; two hundred feet is doubtless a good distance. As to its site, of course, rising ground should be chosen. This may not always be the highest spot but should be a perfectly drained one. The house should be in direct communication with the court at the rear, a home vegetable garden and place for small fruits and dwarf peas, plums, etc. If near the house, such a garden may get the little attention that it requires from the wheel-hoe and will always demonstrate its real value to the table of the farm.

There is need in many a farm for more vegetable and fruit production in this way. If seen from the highway, a further incentive will exist for keeping the garden in good cultivation, for a well tilled garden is a joy and a pride.

The home orchard should not be forgotten and may, as in the plan, find a logical place near the vegetable garden, and near the road. It too, adds interest and pride in the farm besides beauty and crops and saleability to the place in case a sale is desired.

And this introduces my last consideration—the value of doing a little more than essentials in the space around the house. There will have to be a drive to the farm center. It should be direct in its course and follow the easiest grade. It may not be absolutely "straight in" and if curved slightly, it will probably be more pleasing. If possible it should enter the place from the side toward town, should not cut across the sward in front of the house, and ought to be kept a little distance—say fifty feet from the windows of the house, which will be reached by visitors by means of a little spur of the main driveway going to the door. The driveway course must not be "kinky" if curved, but must be in very long gentle lines to be at all practical or pretty.

It should be shaded. So ought the house, and parts of the lawn, but not all of it. A picture that is all frame is not much account and it is the lawn which is the canvas of the farm home picture, the house being the center interest and the planting being the frame. So keep to the general scheme of locating trees and shrubbery about the sides of the lawn, not scattered thru its center. Note the copses along the edges of woods, see that it is the massing of foliage which, after all, is the elemental beauty of natural landscapes. Isn't that the consistent thing to do when making the home grounds? It is called "mass" planting in contradiction to "specimen" planting—the kind most amateurs in-

(Continued on page 756.)
This is a continuation of the fifth article in a series dealing with the Agriculture of New York. The series will be continued next year.

**Hops.** Five counties produced over 90 per cent of the hops grown in New York State in 1909. Small acreages were reported in eleven other counties in different parts of the State. No doubt hops have been tried in nearly every community. During every period of high hop prices, the reports of splendid profits, that circulate, result in many more trials. Farmers moving from the hop counties to other counties have taken roots with them and have applied all their acquired skill in the attempt to establish profitable yards. The results of all these tests are summarized very clearly and concisely in the practices of to-day. The best places to grow hops in this State are in the hop sections of the five counties producing 90 per cent of the State's crop. These counties are listed in Table 4.

**Table 4. Acreage and Yield of Hops in 1909 Related to Climate in New York Counties.**

<table>
<thead>
<tr>
<th>County</th>
<th>Area of Hops</th>
<th>Length of Season with Rain</th>
<th>Normal Rainfall Apr. to Aug. incl.</th>
<th>Yield per Acre, 1909</th>
<th>Rainfall 1909</th>
<th>Rainfall Required for 275 Pounds per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schoharie</td>
<td>34</td>
<td>125-130</td>
<td>19</td>
<td>621</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Otsego</td>
<td>28</td>
<td>130-145</td>
<td>19</td>
<td>817</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Oneida</td>
<td>15</td>
<td>130-145</td>
<td>19</td>
<td>721</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Madison</td>
<td>15</td>
<td>130-145</td>
<td>19</td>
<td>883</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Franklin</td>
<td>9</td>
<td>130-150</td>
<td>17</td>
<td>516</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

But why should the area suitable for hops be so limited? What are the factors that determine it? Referring to the climatic and geologic charts previously published, it will be seen that the counties listed in Table 4 have practically the same climate and soil formation. They have a growing season of about 130 to 145 days with about 19 inches of rainfall in that period. And the hop sections in each of these counties are located on alluvial soils derived largely from limestone rock. Further study of the charts shows that no other section of the State has just this combination of climate and soil. Other counties have soils favorable for the crop but insufficient rainfall. One of these five counties, Franklin, does not have normally as much rainfall as the others, only 17 inches in the growing season, and it is stated that the industry is dying out there. Table 4 also gives the 1909 yields of hops per acre for these five counties and the April to August, inclusive, rainfall for the same year. The season was drier than usual. It will be noticed that the three counties with over 16 inches of rainfall that season, had yields averaging 233 pounds more per acre, or 40 per cent, more than the two counties with less than 16 inches of rainfall.

Alluvial soil with considerable lime is probably the first requirement, a long enough season the second, and abundant rain the third. The hop producing sections of the State, and in fact of the world, seem to be determined by soil and climate. Other factors are not much concerned. The product is not bulky and transportation costs are low in proportion to its value. Hence proximity to market is not an important factor as it is with potatoes, for instance. During the periods of good prices, hops pay so well that usually they are given first place in the cropping system in the hop sections. But during the periods of low prices, which in the past have alternated quite regularly with periods of good prices, other crops, especially potatoes, compete with them. Soil and climate limit the crop so rigidly
that even when prices are highest, hops seldom compete with other crops outside of the hop region, for a place in the system of farming.

Tobacco. The Indians grew tobacco in this country long before the white men came. It was a very profitable cash crop for the early settler for a long time and to-day is perhaps the most profitable crop in the regions where it grows best. Probably, then, the crop has been more thoroughly tried in every section of this State than even hops, and we may accept with even greater assurance the results of all these trials as set forth in the general practices of to-day. Practically 99 per cent of the tobacco grown in New York in 1909, was produced in seven counties, and considerably more than half the crop was grown in Onondaga and Chemung counties.

The reasons probably are soil and climate. Nearly every tobacco producing section of the country is located on alluvial soil. The greatest producing sections are along the Ohio River, the Connecticut River, the James and Potomac Rivers in Virginia, the Roanoke River in Virginia and North Carolina and the Susquehanna River across Pennsylvania into New York. The tobacco sections of New York also are all on alluvial soils, principally along the valleys of the Seneca, Oswego, Chemung and Susquehanna rivers and their tributaries. And the reason why these particular valleys are favored to the almost complete neglect of others, the Genesee and Mohawk for instance, is simply climate.

Table 5 shows the normal climate.

**Table 5**. ACREAGE OF TOBACCO IN 1909, RELATED TO NORMAL CLIMATE.

<table>
<thead>
<tr>
<th>County</th>
<th>Area of tobacco</th>
<th>Average growth, inches in July-Aug.</th>
<th>Normal length of flowering season in days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onondaga</td>
<td>1173</td>
<td>17</td>
<td>155-165</td>
</tr>
<tr>
<td>Chemung</td>
<td>1093</td>
<td>19</td>
<td>145-155</td>
</tr>
<tr>
<td>Steuben</td>
<td>789</td>
<td>18</td>
<td>145-155</td>
</tr>
<tr>
<td>Cayuga</td>
<td>450</td>
<td>16</td>
<td>160-175</td>
</tr>
<tr>
<td>Oswego</td>
<td>284</td>
<td>16</td>
<td>160-175</td>
</tr>
<tr>
<td>Wayne</td>
<td>152</td>
<td>16</td>
<td>165-175</td>
</tr>
<tr>
<td>Tioga</td>
<td>98</td>
<td>18</td>
<td>140-150</td>
</tr>
</tbody>
</table>
in the tobacco sections of the State. Apparently 17 to 19 inches of rainfall during the months April to August inclusive and a growing season of about 150 days at least give the best results when combined with a good alluvial soil. It is interesting to note that equally good tobacco soils in other parts of the State are neglected when the climate does not come within these limits. The upper Genesee valley has enough rainfall but too short a season while the lower part has a season sufficiently long but insufficient rainfall. Most of the Mohawk and upper Susquehanna valleys have too short a growing season and practically no tobacco is grown although the rainfall and soil are favorable.

In the parts of these valleys where the seasons are long enough for tobacco, conditions are favorable also for hops and evidently hops pay better for they occupy the ground. With this exception few crops seem able to supplant tobacco in the system of farming, where it does well. And, as in the case of hops, marketing cost is an unimportant factor in determining to their value, than it is on the cereals. Moreover the Central West states have advantages in the production of cereals. Topography, there, permits larger fields and the use of larger machinery and the soil and climate in the corn belt are more favorable for that crop. So, although the cereals may be produced at a profit in New York and yields are secured as good as or better than those of the western states, the tendency has been and is to grow less of them and more hay, potatoes, cabbage, fruits and truck, because they usually pay better. As evidence of this change, there remain a few of the old-time big corn cribs now
empty, a considerable number of idle malt houses and many old flour mills abandoned or converted to some other use.

Although less important than formerly, these crops are still important crops in the State, occupying together about one-fourth of the crop acreage. However, they are usually grown not for the profit in them but to fill gaps in the labor schedule, and in the case of the small grains, to provide a nurse crop for grass seedings, and, in the case of corn, to furnish a cultivated crop in the rotation in sections where some condition, often markets, is unfavorable for a more profitable one.

Corn for grain is more important in the Long Island counties, the Hudson Valley counties including Washington, Saratoga, Montgomery and Schenectady, and the lake counties of Western New York from Chautauqua to Oswego including Genesee County and those bordering the finger lakes, than in the rest of the State. From two to ten times as much of the crop area is usually in corn for grain in these counties as in the others. Most of this is grown in the valleys and at elevations under 1000 feet. The reason for this is, primarily, length of growing season. These counties normally have growing seasons of 155 or more days. Their rainfall and their soils differ widely, however, and consequently the yields also vary. Counties of lowest as well as of highest corn yields are included so there must be some secondary reasons for corn being important in some of these counties.

In Suffolk and Nassau counties on Long Island, approximately 22 and 17 per cent., respectively, of the crop acreage was in corn for grain in 1909. Most of the soil there is too light to hold hay very long so more than two-thirds of the crop area is usually in plowed crops. Potatoes and truck are grown so far as practicable but many farms are too far from markets or shipping point or can not get the necessary help. Corn for grain is the next best crop for the yields are usually good. In 1909 the Long Island corn yields were the best of any in the State. Moreover, the long seasons permit seeding hay in or after corn and other cultivated crops. So the less profitable oat and wheat crops, which are used as nurse crops over most of the State, are generally omitted there. All these conditions make corn more important in these two counties than in any other in the State.

Corn for grain usually occupies from 10 to 12 per cent. of the crop area in Dutchess, Columbia, Washington and Saratoga counties in spite of the fact that the yields are usually very low. A cultivated crop is needed in the rotation and also a crop that will fill out the labor schedule between oat planting and haying and in the fall. The choice is between potatoes and corn but the climate is not the best for either. The seasons in general are too hot for potatoes and too short for corn. Where soil and market are favorable potatoes are grown, but the majority of the farms have to grow corn in spite of rather low yields. Washington and Saratoga counties have about twice as great an acreage of corn for grain as of potatoes; Columbia and Dutchess have 6 to 7 times as great an acreage of corn as of potatoes.

In the lake counties of western New York, the importance of corn for grain depends upon competition with fruit, beans, potatoes and to a limited extent, cabbage and truck crops. In Seneca, Cayuga, Onondaga and parts of Oswego, Ontario and Wayne counties fruit does not dominate. In the same counties beans are not so important as further west for reasons given later. And there are no markets large enough to make truck or potato growing especially attractive. The soil and climate are favorable for corn, so from 9 to 13 per cent. of the crop area in these counties is devoted to the crop.

In the lake counties west of these, excepting Niagara, corn for grain is less important because the lighter rainfall makes fruit and beans more profitable generally and because
Rochester and Buffalo markets induce the growing of potatoes and truck, all of which compete with corn. As a result only 6 to 8 per cent of the crop area of these counties is devoted to corn.

Still different conditions affect corn production in Niagara county. Potatoes are little grown there because of hot dry seasons and competition with fruits. Although the soil and climate are very favorable for beans, only a fraction of the counties where the soil is better and the season longer. The acreage usually amounts to from four to less than one per cent. of the total area in crops, and the yields are usually low.

The relation of corn types to length of growing season is quite generally recognized. The dent varieties are quite frequently grown where the season is normally at least 165 days long or where the elevation is not much over 600 feet, but they are seldom found reliable where the seasons are shorter. The flint varieties are much more reliable than the dent varieties where seasons are short.

**Oats and Barley.** The yields of oats and barley in New York are closely related to soil. In general the best yields are secured on the best soils. The last few census reports show that Monroe, Genesee, Orleans, Ontario, Cayuga and Wayne counties usually lead in the yields of these crops. Oat yields and barley yields on the Ontario and Dunkirk soil series are generally 20 to 30 per cent. better than on the Volusia series.

However, both crops are grown all

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**Approximate Percent of Crop Area in Wheat by Countries for 1909.**

The wheat growing sections of New York are very definitely outlined. Getting a good grass seeding is the determining factor in many cases. Length of growing season is also important.

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In some of the other counties not mentioned above corn for grain is grown to a limited extent, usually in
over the State regardless of soil, of climate and the resulting yields. In general, barley plays second fiddle to oats and is relatively unimportant except in Cayuga County. Most of the barley grown is just for stock on the farm, but in sections like southern Cayuga County where large acreages of grain are grown, barley is grown in order that the work at planting and harvest times may be better distributed. The acreage of oats varies from 10 to 25 per cent of the total area in crops, and is important in nearly all the counties except those on Long Island and in the southeastern parts of the State.

Knowing that the profits on these crops are low, probably lower than on any of the other important crops in the State, we may ask why they occupy so important a place in the system of farming. The first reason is that they pay something, even if less than wages sometimes, for the time of the farmer and his team when there is nothing more profitable to do, that is, early in the spring at oat planting time and between haying or wheat harvest and wheat planting or corn harvest and other fall work. The second reason is that for most of the State, oats and barley are the best crops available in which to seed for hay or to be followed by winter wheat without losing the use of the land for a season. And the reason that oats and barley are much less important in the southeastern part of the State is that the long seasons permit planting winter wheat after corn and potatoes and in some places permit seeding for hay directly in or after the same crops. The loss of work on oats in those sections is more than compensated by a saving of labor on the whole system and by higher priced hay.

Only two crops compete very much with oats and barley. In the vicinity of pea canneries, peas take the place of oats to a limited extent. They usually pay a good deal better, but ordinarily only a few acres can be handled because of the short harvesting period and conflict with hay harvest. Field beans in bean regions replace oats to a considerable extent but not entirely. They usually pay better but conflict somewhat with other cultivated crops and do not furnish work at the times oats do.

Wheat and rye. The bulk of the New York wheat is produced in thirteen counties. Twelve of these counties are bunched together as compactly as possible in the northern half of western New York and the thirteenth is Suffolk County on the eastern end of Long Island. Each of these counties had more than 5 per cent of its crop area in wheat (winter wheat) in 1909.

The production of rye is more scattered but the nine counties having the largest proportion of the crop area in that crop in 1909 are grouped in the Hudson Valley. The counties next, in proportion of area in rye, are on Long Island and along the margin of the wheat area, in western New York.

The fact that wheat and rye producing sections are so definitely blocked out dispels the suggestion that chance determines where these crops shall be grown. Evidently there are very good reasons for growing them where they are grown and not growing them extensively anywhere else. At least the farmers seem to have been quite unanimous in their opinions when they reported for the 1910 Census. As stated before, the small grains are grown primarily, not for profit, but for bettering labor distribution and for nurse crops. Where wheat or rye is grown, hay is seeded in them instead of in the oats or other spring sown crop preceding. Where wheat or rye is not grown, hay is generally seeded in oats or other spring sown crop. So the question is why do farmers in certain sections of the State generally prefer to seed hay with wheat or with rye as the case may be, instead of with oats or barley? Wheat and rye in the sections where each is grown extensively may pay a little better than oats, but if they do the difference can not be sufficient alone to justify delaying another season in getting the land...
into hay or some other profitable crop. There must be other explanations.

The wheat crop fills in chinks that exist in the labor schedule on most farms that do not grow it. Wheat harvest over most of the State comes between hay and oat harvest, and preparing for wheat planting after oat harvest. The crop also occupies the land through the winter, preventing much loss by erosion and leaching. Rye performs nearly the same services. These would make wheat or rye worth a farmer's considering if they grow well on his farm.

The general opinion in some sections is that hay seedings in wheat are usually better than in oats because the wheat comes off earlier and leaves more moisture for the seeding. The same opinion is held regarding rye in certain sections. And in other sections the experience has been that one crop is about as good as the other in most years. The writer's observations lead him to believe that in regions with less than 18 inches rainfall during the growing season, seedings in wheat are more likely to result in a good catch than seedings in oats and that where the rainfall is more than 18 inches in the same period the results are about the same. A good seeding is important. The price of the seed is some consideration and the labor, the loss of the new crop and the inconvenience of an upset rotation are greater considerations. The probability of a better seeding would therefore be a decided inducement to grow wheat where the rainfall is under 18 inches in the growing season, even though wheat were not so very profitable a crop.

In the bean growing region it is customary to plant wheat after the beans are harvested unless an unfavorable season delays the harvest too long. In such a case rye is substituted if not too late. The cultivating and the harvesting processes with a little additional working leave the bean ground in excellent condition for the wheat or rye so that plowing is usually saved. The yields of wheat after beans are generally better than after oats. This saving of labor and increased yield makes wheat a very desirable crop in a bean region.

Soil and climate are more important in determining where wheat may be grown profitably than they are with oats. Wheat requires productive land, land that is quite well supplied with lime, especially, and also a fairly long growing season, at least 150 days. Both these conditions are found in all these wheat growing counties except in Suffolk County.

(Continued on page 750)
FEW people have an adequate idea of the importance of the duck to the Poultry Industry. In fact, to many persons the poultry industry means simply the "chicken business"—the production of eggs, broilers and fowls—entirely forgetting the duck.

A visit to the greatest distributing center of poultry products in the world, West Washington Market in New York City, would reveal that the duck is an exceedingly large factor to poultry commerce, and a further visit to the duck farms of Long Island would amaze the uninformed by the magnitude of this branch of the poultry industry.

In fowls, there are numerous varieties and classes bearing the same characteristics, other than color or comb, which are adapted to the same uses or could easily be made so; but in ducks there is nothing to take the place of the Pekin.

History of the Industry. Previous to their importation from China in 1873 the domesticated ducks in America consisted chiefly of the Rouens, Muscovys and Aylesburys which were grown for home consumption. Early attempts to "improve" the stock by much crossing and inbreeding resulted in a conglomerate of ducks of all sizes and colors, as devoid of any good qualities as our common "barn yard fowl" and "puddle duck" of to-day. The few that were marketed, being coarse and having a peculiar taste, did not gain favor as an article of food.

James Rankin of Massachusetts, A. J. Hallock and C. O. Wilcox of Long Island, the pioneers of the industry, by better methods of feeding and breeding were producing superior ducks previous to 1860, but as the market was prejudiced against this class of poultry there was little demand for their product and progress was exceedingly slow.

The introduction of the Pekin gave a new impetus to the business, for it was soon found that this Oriental breed of ducks possessed remarkable qualities that were lacking in the other breeds. They attained maturity much earlier and proved to be prolific layers. Their pure white plumage, plumpness and clear skin, presenting a better appearance on the market than their scraggy, pigment-spotted predecessors, and the high quality of the meat, caused them to be better regarded as an article of food.

With the rapidly increasing popularity of the Pekin, the duck growers have greatly increased their production, new farms have started and for years there has been a belief that the supply would exceed the demand. But this is one industry where the supply seems to create the demand, for never, until the past year, has the market been glutted. This recent condition was due to the tying up of the transatlantic passenger steamships, on board which thousands of ducks are consumed. This misfortune, together with the present exceedingly high cost of grain, has caused the duck growers to reduce their breeding flocks considerably and the present year will find fewer ducks produced than last.

The Long Island Farms. Although duck breeding is carried on quite extensively in the Eastern States, to New York belongs the honors of being the greatest duck producing state in the Union, and Long Island enjoys the distinction of being the center of the duck industry of the world. There are fifty-nine duck farms—or duck ranches as they are generally called—on Long Island, representing an investment in land, buildings, equipment, and breeding stock of nearly two millions of dollars. During the past year these farms produced one million, fifty thousand ducklings, the value of which was $892,500.00. The number of ducks produced on the dif-
ferent farms vary from 10,000 to 125,000 annually. The two largest duck farms of the world are located here—A. J. Hallock’s Atlantic Farm, with an annual capacity of 125,000 ducks, and D. G. Homan’s Riverside Farm where 85,000 ducks were grown last year. On the latter farm the writer was initiated into the methods of “big business” with ducks, serving in the capacity of superintendent for three years. It was a long jump from a “one horse” ranch with an output of 15,000 ducks to one over five times larger. But the method of production on all the farms are much alike aside from the fact that the larger farms necessitate considerable machinery to handle the vast amount of feed used. An idea of the proportions of the industry may be had from the fact that on the Riverside Farm as much as nine tons of feed are used daily during the busy season. This feed—corn meal, bran, low grade flour, and beef scrap—is purchased by car lots, and is stored in hoppers or bins, each hopper holding a car of feed. The feed mixers, such as are used in the large bread bakeries for mixing dough, are erected near the hoppers. The feed is scooped into the mixers in proper proportions and the necessary amount of green food and water are added. When the mass is thoroughly and properly mixed, it is dumped into the feed cars, ready for feeding. These cars run on elevated steel rails which, by the use of turntables and switches traverse every duck pen on the farm. The feed is shoveled from the cars to the feed boards which are placed alongside the tracks in the pens, and the advance of the feed cars from pen to pen is loudly heralded by the multitude of ever-hungry waiting ducks. This miniature railway system on the Riverside Farm is more than a mile in length.

Breeding Stock. The breeding stock is renewed each year and is selected from the market ducks in early summer. Care is used in selecting only ducks of good size, deep keel and full breast with bright alert eyes and erect carriage. The duck growers seem to realize more than do the average breeder of fowls the importance of maintaining and increasing the physical vigor of their stock. Each year new blood is introduced into the flocks by procuring good drakes of a different strain. This is generally accomplished by a system of exchange
the Long Island breeders exchanging drakes with breeders of other sections. At intervals new blood is also procured by the purchase of eggs or stock from California, where new stock is frequently imported from the Orient.

The ducks and drakes are kept separated until October or November. One drake is kept to each five, six, seven or eight ducks, according to the season of the year and the location of the laying house. Should the farm be so situated that the breeders can have the advantage of unlimited range, one drake to seven ducks suffices, but should they be kept in pens, it is necessary to have one drake to each five ducks in order to secure a good percentage of fertility. As spring advances the number of drakes are reduced in both cases and in March and April one male to eight ducks in the free range flock and one to six or seven in the penned flock, are sufficient.

The laying house is located on the most isolated part of the farm, for as the Pekin is naturally timid and easily frightened, the egg production would be greatly impaired should they be continually or repeatedly alarmed by the presence of strangers or noises. The system of managing and feeding the breeding flock and the growing ducks differs somewhat on every farm and lack of space prohibits the discussion of the many different methods employed, although it may be stated that on Long Island the addition of cooked fish to the laying ration has been found exceedingly beneficial to the production of large eggs of high fertility.

The remarkable growth of the duck industry on Long Island is due, besides the favorable climatic conditions, to the unlimited amount of water front land available for duck farming. The breeding flock, where given free access to the water, are more prolific, and keep in better condition than the ducks left on farms where water is supplied for drinking purposes only. Nevertheless there are a few successful upland duck farms, but this method of duck growing necessitates a greater amount of labor and the results attained do not compare with those attained on water front farms.

Unlike other fowls, ducks lay during the early morning, the bulk of the eggs being laid before six A. M. They start laying during December and continue until June or July, the height of egg production being reached during April. When through laying they are fattened for market. The average yield per duck during the cycle of production is from 100 to 150 eggs.

Incubation: It is much more difficult to hatch ducks' eggs than hens' eggs, the former requiring 28 days incubation. The moisture and ventilation problems are difficult and vary with the seasons of the year and the humidity of the atmosphere. Also, if the breeding stock has not been properly fed and attended during and previous to the laying season, while the eggs may be high in fertility their hatchability may be very low.

The mammoth hot water incubators have rapidly replaced the individual lamp machines, not necessarily that they hatch better, but on account of the saving in fuel and labor.

Brooding: The brooder houses are simply but tightly constructed. No complicated methods of heating, such as are found in many chicken brooder houses, are attempted. Generally, the houses are 16 feet wide and as long as desired. They are built high enough to allow the attendant good head room. These buildings, which face the South, are divided into pens 5 feet wide, 12 inch boards being used for partitions. Each pen accommodates 100 ducklings. The heating pipes are placed at the North side of the house, using the pen partitions for supports. Six pipes—three flows and three returns—are generally used, being placed about six inches apart. Leavers or hovers are placed over the pipes to direct the heat downward. The newly hatched ducklings are kept close to the hovers the first day or two by placing a board crosswise in
the pen, and when the board is removed the ducklings have the use of the entire pen. The floor is carpeted with straw which is renewed every few days. During cold weather, cloth curtains are hung in front of the hovers to keep in the warmth. The newly hatched ducklings, like chickens, are very susceptible to the changes of the atmosphere. The first three weeks is the most critical period and, unlike chickens, after passing the critical stage it is one hundred chances to one that the duckling will attain maturity. On warm days they are allowed outdoors in runs built adjoining the pens. They are fed four times daily, although there are duck raisers who feed but three times during the day.

Growing and fattening. As previously stated in this short article I cannot attempt to discuss the methods of feeding, which differ with the age of the ducks. To do justice to the most important subject of feeding would require many pages.

When three weeks old, the ducklings are removed from the hot brooder house to the cold brooder house. The latter house is arranged similar to the former with the exception of the foliage of the trees and shrubbery, the absence of which necessitates the erection of sheds for shelter. A few days in the water front pens changes the ducklings appearance considerably, their scant soiled plumage becoming white and full.

When ten to twelve weeks of age, the ducklings weigh from 5 to 5½ pounds a piece and are ready for market.

Conclusion: The duck growers have tried to solve their many problems of feeding, breeding, housing and marketing with but little Federal or State aid, and there is still much that could be done for this rapidly growing industry by scientific experiment and investigation.
THE INTERCOLLEGIATE BUREAU OF OCCUPATIONS OF NEW YORK

BY JULIA SEARING LEAYCRAFT

Chairman of the Publicity Committee of the Bureau

The Work of an Organization Designed Especially to Assist College Women to Find Employment.

The Intercollegiate Bureau of Occupations, incorporated in 1911 under the laws of New York State, was organized by the New York alumnae associations of Barnard, Bryn Mawr, Cornell, Mount Holyoke, Radcliffe, Smith, Vassar, Wells and Wellesley. Duly elected representatives from each association make up the board of directors, in which the management of the Bureau is vested. The dean of each college and the Adviser of Women of Cornell University comprise the Advisory Board of the Bureau.

The Board of directors appointed, in June, 1911, as manager of the Bureau, Miss Frances W. Cummings, a graduate of Smith College. Under her direction the Bureau has developed from an experiment into a unique employment exchange for trained and educated women, with a Department for Social Workers where men are also registered. The Bureau is more than an agency for placing people in positions. The registration and recommendation of applicants might be termed the laboratory work of the Bureau; for its founders, bent upon discovering larger opportunities for women in fields other than teaching, began at once to place women of higher education and training in a variety of positions; believing that the actual experience of an "intelligence office"—in the highest sense—would yield much reliable information about different vocations and indicate the most urgent and important avenues for further investigation.

The need of gaining concrete information about the openings for women, in professions other than teaching, has long been recognized by college women who have themselves found difficulty in entering upon the kind of work which most attracted them. This Bureau is the first in the country to be organized and managed exclusively by college women. At present there are similar bureaus in several cities, notably the Bureau of Occupations for Trained Women in Philadelphia and the Chicago Collegiate Bureau of Occupations.

Since the office of the Bureau opened in October, 1911, and up to January 1, 1915, 2,670 applicants for positions have been registered, 2,576 calls from employers have been recorded and 1,106 positions have been filled; 94 Cornell alumnae have registered with the Bureau, and 8 Cornell alumni have registered with the Department of Social Workers. The following types of positions have been filled by the main department: secretaries, stenographers, proof readers, filing clerks, office assistants, institutional superintendents, dietitians, restaurant managers, bookkeepers, statisticians, editorial workers, librarians; and publicity, executive, and financial secretaries.

Some of the types of positions filled by the department for social workers are: Investigators for state industrial commissions, visitors for relief societies, executive officers of charity organization societies, head workers in settlements, club leaders in churches, executive officers in state probation societies, nurses in public schools and visiting nurses' organizations, financial secretaries in tuberculosis associations, welfare workers in industrial establishments, and social service directors in hospitals.

The fact should perhaps be emphasized that the Bureau registers not only college women, but four groups
of workers in occupations other than teaching: (1) Holders of degrees from accredited colleges. (2) Women trained professionally or technically, whether or not they may be college graduates. (3) Women with valuable experience in the vocation for which they register. (4) Candidates for positions in social work, both men and women, who have either the college degree or training or paid experience in social work.

One of the positions called for a college graduate who, in addition to stenography and typewriting, had had special training in French, German, physics and mathematics, and had had contact with engineering work. A candidate was found possessing all these qualifications. Another call came from an automobile company who wished to secure, within twenty-four hours, an attractive, college bred young woman with a working knowledge of mechanics and a genius for salesmanship! This prodigy was also quickly discovered among the files of applicants.

In addition to the registration and placing of applicants the Bureau has given advice and information to about 5,000 people who have called at the office, since it opened, many of whom were not eligible for registration. This work of vocational counselling to undergraduates, to the recently graduated, to those who think they have mistaken their vocation and who wish to change, to the many women of education and culture who are unexpectedly thrown upon their own resources, is one of the most important of the activities of the Bureau. The ability to advise wisely is constantly being augmented by the actual experience in placement work, and the Bureau is continually enriching and classifying its store of information about technical schools, civil service positions, other agencies, fellowships, and vocational opportunities.

Up to the present time the main department of the Bureau has been maintained by the earnings from fees and commissions and by contributions from the alumnae of the nine operating college alumnae associations. The Department for Social Workers is separately financed, both the School of Philanthropy and the Russell Sage Foundation having contributed to it, during 1913-14. While the earnings from fees and commissions in the main department are steadily increasing, they obviously should not be expected to cover the total cost of maintaining the Bureau, which makes no charge to any except those who actually register for positions. So that the cost of acquiring facts and of giving information to the many who ask for it, must be met in some other way.

The alumnae associations are still contributing to the Bureau amounts ranging from $100 to $750 annually, the total appropriation amounting each year to about $3,000. It is proposed to reduce these appropriations in May, 1916, to an annual fee of $25 from each association, giving each the privilege of appointing one representative to the Board of Directors, instead of two, three, or four as at present. It is further proposed to admit to membership in the bureau, at annual dues of $1, $2, $5, and $10, individual members of the alumnae associations and all interested in the continued growth of the Bureau. Individual members will be privileged to vote at the annual meeting, and to elect officers and directors. By this means, direct contact between the Bureau and its supporters will be established and employers, applicants, and men and women keenly interested in vocational and economic problems may have a voice in its councils.

In this brief account of the work of the Bureau it is hardly possible to give a vivid and just impression of the valuable work it is doing, of its hopes for the future and its increasing usefulness. Nor can we find a better conclusion than that of Miss Mary Van Kleeck, the President of the Board of Directors of the Bureau in her latest report of its work, in which she says: "Nevertheless, in the last analysis it is not the Bureau
but the college woman, stimulated, we may hope, in some measure by the Bureau and perhaps guided by its experience, who must blaze a new trail. The times are a challenge to her to prove her capacity to adjust herself to new conditions, to recognize to the utmost the value of training and experience as a preparation for success, to take the long view of herself as a worker and to be courageous and ambitious in her plans for her career."

**RECENT TRUSTEES MEETING BRINGS IMPORTANT DEVELOPMENTS TO THE COLLEGE OF AGRICULTURE**

At the meeting of the administrative committee of trustees of Cornell University held on Saturday, May 8, a number of matters in relation to the college of agriculture were passed upon. These covered general questions of administration, personnel, the workings of the college in connection with the other federal and state agencies, and development within the college itself.

**CHANGES IN PERSONNEL.**

Professor A. R. Mann, Cornell, '04, who has been secretary and registrar of the College of Agriculture since 1909, has been granted leave of absence for the year 1915-16. Professor Mann expects to take graduate work at the University of Chicago during the coming summer term and all of next year. While there he will take up special work in sociology and other related lines looking toward the investigation in the field of rural social conditions. He will take up work in this line when he returns to the University as Professor of Rural Social organization.

Professor Mann's title as registrar and secretary will be taken by Professor Cornelius Betten of Lake Forest College, whose appointment has just been ratified by the board of trustees. Dr. Betten received his A.B. degree from Lake Forest in 1900, and his A.M. in 1901. From 1901 to 1903 he was in charge of biology in Buena Vista College, where he had much contact with administrative work. From 1904 to 1906 he was in the graduate school of Cornell University, and received the degree of Ph.D. from Cornell in 1906. Since that time he has been in charge of the Biology Department of Lake Forest, with the title of Professor of Biology. At the same time he has been responsible for the registration work of the college. He is a member of the society of Sigma Xi. Dr. Betten has been chosen for the position both because of his own scientific ability and because of his talent for those types of administrative work which brings him in contact with the student body.

Dr. A. A. Allen has been appointed assistant professor of ornithology in the College of Agriculture. He has been for some time an instructor in the arts college. His main work in his new position will be in connection with economic ornithology, but he will give other courses in general ornithology, and in advanced systematic ornithology. He will also be able to give some of his time to work in nature study.

In addition, to the year of Sabbatic leave granted to Professor Mann, the trustees approved the application of Professor Gilbert of the Department of Plant Breeding for a year of Sabbatic leave to begin with the fall of 1916. Professor Gilbert will probably spend the year in research and study.

Professor James E. Rice of the Poultry Department was granted leave for the second term of the fiscal year 1915. This is the first such leave which has been applied for by Professor Rice in something over twelve years of continuous service.
Professor Rice states that his intention is to devote the time to special study, and that most of this study will be taken at Cornell particularly along the lines of farm management and economics.

Professor W. A. Stocking is granted Sabbatic leave for the first half of the academic year 1915–16. He expects to use the time for writing or study, and probably a portion of it in making an investigation of dairy work and industry in New York State and in a number of the dairying departments of the leading colleges of agriculture.

(Continued on page 752.)
Nearly one year has passed since Dean Galloway left Washington to take up his duties here at Cornell. This has indeed been an eventful year. Great strides have been made in the development of the College.

Former Director Roberts laid the corner stone for the teaching of good sound agriculture, Director Bailey working upon this foundation saw the possibilities and built the structure which now Dean Galloway is fashioning into an institution of which the residents of this state may well be proud.

As there are many details of such a structure to be perfected, so Dean Galloway has made marked progress in working out the details of organization. His experiences in this line in connection with the Federal Bureau of Plant Industry, and as Assistant Secretary of the U. S. Department of Agriculture, have well fitted him for the work.

Probably the most important task undertaken by the new Director is the organization of the various departments along a more business-like basis. There is now established a uniform system of accounting for all departments and all bills for collection are now handled by the central business office. This greater centralization and uniformity will result in greater efficiency in the use of appropriations.

An Information Service has been established for the purpose of giving out to the press of the State timely information in an attractive, readable form. Already this service has reached over fifteen million readers.

By putting before every member of the State Legislature in pamphlet form last year's appropriations for the College and what new ones were asked for and to what use they were put, Dean Galloway appealed directly to the business sense of the legislators and secured an additional appropriation of $129,000 for the administration of the College.

Dean Galloway is a good mixer and the student's friend. This has been demonstrated by the conferences he has had with seniors in which he has talked over with them their plans for their future life's work. He has also
offer many facilities of the College to make the assemblies more representa-
tive and a greater influence in binding the students into one large body.

The New York State College of Agriculture is exceedingly fortunate. Each director has "built better than he knew." With the sound begin-
gnings and guided by the high ideals of service established by his pre-
decessors, Dean Galloway's genius for organization, his strong spirit of
service, and his ready democracy assure the future of the College.

As the term draws to a close we hear of another member
of the faculty of the College of Agriculture who is to leave, but fortunately with the promise of returning.
Professor Mann is one of the most popular members of
the instructing and administrative staff of our college and it is with sincere
regret that we bid him goodspeed. When Professor Mann leaves, the students
will be temporarily without one of their best friends and co-workers. It has
been with the aid of Professor Mann that the COUNTRYMAN has been given
good advice and held to right policies; and we wish to thank him for the help
he has given us in the past, and to welcome the day when he will be with us
again in charge of the Community Service.

The Cornell Countryman is dedicated to the service of
the New York State College of Agriculture and to all its
students—past, present and to be. We believe in the
future work of the College and we believe in the future work of the great
majority of those who enter its gates. This time of year is full of expectancy
and a kind of anxiety to all seniors. Soon each will face the acid test. The
world will not fall at your feet because you came here to school. Rather will
it say, "You have had exceptional opportunities to prepare yourself for
service. Now, what will you do? How will you use your talents?" Everyone
has good hard work to do and in the doing of it is apt to forget some of
the things which he should prize highly because they go to make up the better
things of life.

Each one of you owe to your Alma Mater more than you can ever pay.
She has offered you invaluable opportunities. Whether you have used these,
each man will have to answer for himself, because at the last analysis each
one is responsible to himself. He is master of his fate. Each one of you has
formed acquaintances and friendships here which should have made pleasant
your stay and should have aided your development. Your friends are an in-
valuable asset. In the bustle of your life’s work you tend to lose these
friends. Just as a drifting ship is in danger, so you are in danger of losing
your associations and friendships of your Alma Mater.

There is one certain way by which most of us can keep in touch with those
influences which four years have wrapped around us. That is by the Former
Student and Campus Notes of the Cornell Countryman,—your mouthpiece
and your "mixer." The amount of service it will be to you depends upon
you. There is but one really satisfactory way of getting full, interesting and
correct notes about you. That is by your writing us a letter at least every
year telling us and sending us pictures of yourself and your work. They
are graphic expressions and reminders to your friends. Don’t be a ship, drifting. Be big enough to keep all these college associations alive while you are forming new ones. These are what make up the essence of life. Help us to better serve you, your friends and your Alma Mater.

As a result of the elections announced in the last issue the new board now assumes control of the publication. Since the old board will not be here for many more moons we make haste and take this opportunity to thank its members for all they have done to make the COUNTRYMAN what it is, and for entrusting it to our tender care.

"But what will you do with THE COUNTRYMAN?" someone naturally asks. Well, we are going to follow precedent until we find reason to change our policies. THE COUNTRYMAN is now mature; it has grown out of that stage which characterizes all embryo or school-boy magazines. We are going to make special effort to put THE COUNTRYMAN on speaking terms with every student, past and present, of the College of Agriculture. And what’s more THE COUNTRYMAN is going to become such a faithful companion, so well informed and posted that you absolutely cannot get along without him.

With this issue THE COUNTRYMAN suspends publication until the October issue, which will be ready for distribution at the opening of the first term of next year. THE COUNTRYMAN is going to travel most of the summer and the accounts of these travels through different agricultural sections of the world you will be anxious to read. In the October issue you will find a description of Agriculture at the Panama-Pacific Exposition and the part Cornell played in this big affair. We shall keep going and stop in each corner of the earth which proves of interest. The accounts of the travels of THE COUNTRYMAN will appear in serial form and each month’s issue will contain an account of farming as it is practiced in some one foreign country.

There are a few considerations which should be kept in mind by those who are to get their initiation of farm experience this summer. You must remember that the average "greenhorn" is usually worth little more than his board. You are getting paid for what you do and not for what you think you know. Look at the work from the standpoint of the value of experience to be gained and not from the financial returns.

You will find that the farmer does things in many ways different from the way theory teaches and you may be inclined to criticize, but remember that you are working as a hired man and it is up to you to do as your employer wishes. His methods are probably the result of years of trial and he knows much better under any given conditions what is best to be done.

Most farmers are opposed to "book-farming" because in it theory and practice are not generally mixed in the proper proportions. Your Alma Mater will be judged by your conduct. There is too much of a sentiment among farmers that colleges turn out men who are unfitted for work. It’s up to you to stick and to do a little more than you are expected to do. You owe this to the farmer, to yourself and to your Alma Mater. Keep your eyes open, your mouth shut, work and learn.
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Agriculture again leads the other colleges in University enrollment. Ag. now has 1,670 students, a gain of 208 over last year, and the largest gain for the year exhibited by any college. The total enrollment of the University, barring short course students, is 5,340, or 325 more than last year.

The annual inspection of the Cadet Corps was held May 11 and 12 by Captain J. S. B. Schindel of the General Staff of the United States Army. On May 11 a regimental drill and personal inspection, followed by an outpost problem, was held. The following day a sham battle was fought. Captain Schindel stated that the men were better drilled than ever before, especially in open field work and tactics.

Miss Catherine Dougall, '15, of Pretoria, South Africa, probably perished when the Cunard Liner Lusitania was sunk, since her name does not appear in the list of survivors. Miss Dougall was in the College of Agriculture and was taking special work in the Department of Domestic Economy. After having visited several friends in Montreal and Quebec, she sailed for her home on the destroyed ship.

Cornell took a step toward abolishing class politics, and making things more efficient, when on May 5th, the third Convocation Hour was called for the purpose of discussing the proposed Student Council. This Council will be composed of 15 members: 8 Seniors, 4 Juniors, 2 Sophomores, and 1 Freshman, who will be elected by their respective classes. The president of the Council will be president of the Senior Class. The Student Body voted in favor of this plan, which will be later ratified by a general assembly.

Recent elections by Senior Society the two senior honorary societies of the College of Agriculture include the names of the following men of the Junior class.


Acting on the recommendation of the Committee on Student Honor the undergraduates of the Ag. College recently adopted a change in the by-laws which reads as follows: Undergraduates are either expected to speak to any person committing an offense concerning the act, or to report the case to the committee on Student Honor.

During the past term several offenders of the honor system rules have been tried and four convictions with penalties were made.

The committee under whose administration the honor system has been conducted for the past term are as follows: W. V. Ellms, '15; T. B. Charles, '15; D. S. Hatch, '15; Miss Mabel Flumerfelt, '15; Miss Gertrude Bates, '16; Miss Helen Spalding, '16; R. G. Bird, '16; Leslie Brown, '16; and Stuart Wilson, '16.

In an effort to make sure that the students of the State College of Agriculture at Cornell have sufficient practical farm experience, Prof. Asa King of the Farm Practice Department is working on a plan by which students will be given employment on farms through-out the state during the summer months.

The college authorities are seeking first-hand information about farms which are run on a business basis and with up-to-date farming methods, and where the owners will take an interest in the students. The college plans to locate the students on these farms as laborers. Some of them may be able to bring to the farm special knowledge and help in the solution of special problems, but it is expected that they will be paid only for the work which they do, on a basis of what they are worth to the farmer.

By winning three Ag. Baseball games and tying a fourth the Ag. baseball nine have made a good start in securing the intercollege championship. The scores of the games already played are as follows: Agr. 9, Vet. 3; Agr. 4, Chem. 4; Agr. 9, Law 5; Agr. 5, Arch. 1.

Beginning next fall, the women of Cornell University will publish a monthly paper which will be the first of its kind in the history of this University.

Such a paper is designed to stimulate interest among the girls in their class activities and in the activities...
of the university women as a whole.

Miss Grace Marcus, '15, is chairman of the committee which started the paper.

The movement started Frigga Fylge by the women of the Club House, College of Agriculture in 1913 to raise money to build a girls' club house on the campus, and to be a home for Frigga Fylge, and a recreation center for the women of the college has gained considerable headway.

Earning money by food and candy sales, selling ice cream and cake, the club now has in the bank $1,414 with which to start the club house. Dean Galloway has appointed Professors Mann, White and Works to act with the committee appointed by Frigga Fylge consisting of Miss Van Keuren, Chairman, Miss Ruth Smith and Miss C.C. Fleming, to select the best site for the house which is to be back of the Home Economics Building. It is expected that erection of the club house will be started shortly.

At Frigga Fylge elections which took place May 5–6, in the main hall of the Home Economics building the following officers were elected: President, Ruth Smith; Vice President, Araminta McDonald; Secretary, Marion Lewis; Treasurer, Helen Adams.

The women students of the University observed May Day on the afternoon of May 15 with Dorothy Douglas, senior class president as May queen. The fete which consisted of May pole dances, Minuet, Greek, Irish Folk and Shepherdess dances was held on the girl's athletic field.

Advanced Reading Courses in Pomology and Vegetable Gardening Recent Issues of the Extension Department. In order to meet the growing demand for home study courses, the Extension Department has just started an Advanced Reading Course in Vegetable Gardening in the Reading Course for the Farm series. The April enrollment in the Reading Course for the Farm exceeded 12,000. This figure is just double that for six months previous.

The Vegetable Gardening Course is the second advanced course offered. Last Fall an advanced Course in Fruit Growing was started which immediately became popular. Both courses are said to be valuable to former students who wish to "brush up." It is likewise just as valuable to those who have never studied the above subjects.

The advanced reading-courses are conducted by means of a textbook, questions, and correspondence. A special effort is made to assist in making local application of the principles and practices discussed. In Fruit Growing, Professor H. B. Knapp, of the Department of Pomology, grades the work of those taking the course, making helpful comments and suggestions. In Vegetable Gardening, the student's work is reviewed by Mr. A. E. Wilkinson, of the Department of Vegetable Gardening. The only expense connected with either course is the purchase of the textbook. As the textbook is recognized as a standard book, it is considered to be well worth owning, especially at the reduced price offered to members of the course.

It is pointed out that former students who desire to receive information on practical farming problems without expense may register for Reading-Course lessons. Many of the lessons available are especially timely and bear directly on this year's practices. Further information about the Reading-Course lessons and the advanced reading-courses may be obtained by addressing the Reading-Course for the Farm, College of Agriculture.

On April 27th Dean Miscellaneous Galloway delivered a lecture before the members of the Plant Pathology department on "The Origin of Plant Pathology in America." Dr. Galloway was closely connected with the early history of Plant Pathology in this country.

Professor E. G. Montgomery of the Department of Farm Crops has recently been appointed one of the judges who make up the Jury of
Awards at the Panama-Pacific Exposition at San Francisco. Professor Montgomery is the fourth Cornell professor to receive such an appointment. He left Ithaca in the middle of May and will return June 1. The other professors who are now at the exposition on the Jury of Awards are H. H. Wing, Vladimir Karapetoff and W. R. Orndoff.

Professor Rankin of the Plant Pathology department has been placed in charge of the White Pine Blister Rust Inspection in New York State.

Professor Rankin of the Plant Pathology department has been placed in charge of the White Pine Blister Rust Inspection in New York State.


The Cornell Track Team won from Harvard on May 8th, at Cambridge, by the score of 59 1/2 to 57 3/4. Richards, Agr., '17, proved to be a tower of strength winning three firsts. Windnagel, Agr., '17, won the mile in 4:22 and 4/5.

At the last meeting of the Poultry Association, the annual election of officers was held. F. D. Brooks was elected president, W. J. Wedlake, vice president, P. A. Winchell, secretary and treasurer, W. S. Young, assistant secretary and treasurer, C. H. Rector and J. E. Houck, directors.

During the last year Ag. Basketball the Basketball Team of the College of Agriculture, playing in the Inter-College League, have proven themselves one of the best. They lost but one game during the regular season, and won over last year's champions by the score of 43-16. However they lost the final game with C.E., thereby losing the championship. J. E. Houck, '17, has been elected captain for next year.
'04, B.S.A.—Albert R. Mann, soon after graduation, was appointed Assistant Superintendent of the Boston Farm and Trades School on Thompson's Island, Boston Harbor. He was there till 1905 when he became private secretary to Professor Liberty Hyde Bailey to aid in the preparation of the Cyclopaedia of American Agriculture. In 1906, he married Mary Douglass Judd, '04. In 1908 he was made Assistant Professor of Dairy Industry at Cornell, but shortly after accepting this position, Professor R. A. Pearson, who was at the head of the Dairy Department, was appointed Commissioner of Agriculture at Albany and took Mann there as his secretary. Four months after going to Albany, however, Professor Mann returned to this College as Secretary to the Director and Editor, and the following September was made Secretary, Registrar and Editor of the College. In October 1910, he was advanced to full professorship. In 1911 Professor Mann published “Beginnings in Agriculture” which was edited by Dr. Bailey and is widely used as a text book in secondary rural schools.

In his undergraduate days, Professor Mann was prominent. Among his other activities he was chairman of the committee which nominated the first editorial staff of the Cornell Countryman. His high scholastic work enabled him to finish the course in three years and won for him an election into Sigma Xi.

Professor Mann takes his Sabbatic leave next year and when he returns in 1916, will become Professor of Rural Social Organization. More complete account of his future work may be found on page 736.

'02, M.S.A.—J. A. Foord, is now Head of the Department of Agriculture at Amherst. For a few years after receiving his master's degree, Mr. Foord was an assistant in Animal Husbandry. He left Cornell to become Professor of Agriculture in the Delaware Agricultural College where he remained for two years. After this he was Assistant Professor of Agronomy in the Ohio State College of Agriculture for one year. Before being made head of the whole department of Agriculture, Professor Foord was Professor of Farm Management at Amherst. He married Miss Grace Law, daughter of Professor Law, Emeritus Professor of Veterinary at Cornell.

'07, Sp.—W. W. Bassett is the proprietor of the Florida Nurseries at Monticello, Fla. He is a wholesale grower of pecan and citrus trees, satsuma oranges, pomelos, lemons, and kumquats. He is a member of the Southeastern Pecan Nurserymen's Association, and is secretary of the Georgia-Florida Pecan Growers' Association. Mr. Bassett will speak at the convention of the latter Association on "How to Grow First Class Nuts".

'09, B.S.A., '11; M.S.A. L. B. Cook, for three years after graduation was instructor in the Cornell Dairy Dept. He left Cornell in 1912 and took up work with the U. S. Department of Agriculture. He was stationed in Washington, D. C., with the Milk Investigations' section of the Dairy Division, Bureau of Animal Industry. About one-third of Mr. Cook's time is spent in traveling and the remainder in educational work with dairymen; and state and municipal authorities.

'09, Sp.—Milligan Kirkpatrick is Instructor of Poultry Husbandry at Pennsylvania State College. While at Cornell he was the winner of the
Eastman Stage. He has arranged to come to Cornell for the summer term and will specialize in Poultry Husbandry for his B.S. degree.

'11, Ph.D.—Dr. W. A. Riley is now on Sabbatical leave of absence and is pursuing special studies in parasitology at the Cornell Medical College in N.Y.C.

'11, B.S.A.—Last Nov. we told of the cattle that Thos. Elder of the Mount Hermon, Mass., schools was raising. Here are extracts from an article about them. "At the Connecticut Fair the Mount Hermon herd won six first prizes, seven second prizes, three third prizes, and seven fourth prizes. They also won the Premier Championship, awarded to the breeder winning the greatest number of prizes.

At the Vermont State Fair the herd again demonstrated its winning power by taking eight firsts out of a possible twelve as well as two championships, the Championship for heaviest winner and a silver cup for the best four cows in milk.

At Brattleboro, Vt., the herd took 10 of a possible twelve firsts. At Brocton, Vt., they won six firsts, eight seconds and five thirds, and two fourths; two out of four championships, two out of four Reserve to Championships, one of the two Grand Championships, and one of the two Reserve to Grand Championships. At this fair the school also won Premier Championship awar ded to the largest winner. It will be seen that at each of these four fairs Mount Hermon won consistently the greatest number of prizes and the largest amount of money. By this herd of Holstein cattle hundreds of people have become acquainted with the Mount Hermon and Northfield work.

'11, B.S.—The engagement of E. W. Benjamin to Eva Hollister, '15, has been announced.

'12, B.S.—Harry Sonnenfeld has given up his position as soil chemist at the Elsenburg Government College of Agriculture, Cape Province, South Africa to enlist in an artillery regiment. A letter states that he is now engaged in wiping out German Militarism on the firing lines in German Southeast Africa.

'12, B.S.—J. G. Cochrane is manager of a farm at S. Bayfield, Mass.

'12, B.S.—Chas. D. Bennett has recently received an appointment in Court Investigations, Bureau of Plant Industry U. S. Dept. of Agriculture.

'12, B.S.—C. H. Hull, of Atwater, California, writes to the Countryman as follows: "For the past three years I have been running a two hundred and forty acre ranch, of which I own a hundred and forty acres, and the rest I rent. There are one hundred and twenty acres of peaches in full bearing, and twenty-five acres of grapes of the European varieties, such as you people buy during holidays. The rest of the ranch has been planted to sweet potatoes. At the present writing preparations are being made to establish a dairy of Registered Holsteins, which, by the way, is a fine game at present as alfalfa here keeps 3/4 of a cow per acre the year around, and there is nothing that grows in New York that can touch the California alfalfa for production, ease of curing, and general purpose feed. You see we never have rain in haying time here and we hay alfalfa from the middle of April until the first of November." Mr. Hull was recently elected secretary of the Chamber of Commerce of Atwater.

'12, B.S.—Harold Rutschback has recently been elected president of the Farm Bureau Association for Chenango Co.

'12, B.S.—A. H. White, is with Horace Waters & Co., 134 Fifth Ave., New York. His father is president of the company. His home address is 101 Summit Ave., Mt. Vernon, N. Y.
'12, Sp.—F. W. McLane has accepted a position with the Hurons Farm Company of Ann Arbor, Mich.

'12, Sp.—Thomas Murray was recently in Ithaca on a vacation. He is engaged in Farm Bureau work in West Virginia.

'12, B.S.—S. H. White is now a student at Harvard taking advanced work in landscape architecture.

'13, B.S.—Lewis C. Armstrong writes that he is associated with the Atlantic County Vocational Board of Education. His headquarters are at Hammonton N. J.

'13, B.S.—J. S. Clark who was formerly Herdsman on the Mixter Farm at Hardwick, Mass., has recently been promoted to the position of Superintendent.

'13, Sp.—Denton Kenyon is working on the farm owned by Miss Loomis and Miss Fuertes at Blooming Grove, Orange Co., N. Y.

'13, Sp.—J. L. Prehn is now manager of the farm of C. W. Bowen at Woodstock, Conn.

Grad. '13: '14.—R. W. Leiby, who was studying for his doctor's degree, has accepted a position with the State Entomological Department at Raleigh, N. C. He has left and will take up work at once.

'13, B.S.—John D. MacCown, who is now owner of the Blue Ridge Fruit Farm at Leesport, Berks Co., Pa., writes to the COUNTRYMAN as follows: "As to my history, both past and present, it is enough to say that I spent several years after leaving Cornell in the South-west pursuing the mining game, and while there became interested in commercial fruit growing. This resulted in the purchase of a quarter section of land in the Blue Ridge section of Berks County, Pennsylvania. I have over twenty acres planted to apples and peach trees and intend to increase this acreage annually. In the meantime, I am cropping the land with general farm crops, and am taking up pig raising on the side. In close proximity, I have an old school friend, a graduate of State College, who owns and operates a large size farm. The two of us are cooperating in experimenting as well as in buying and selling.

'13.—G. H. Masland’s address is Maple Lane Farm, R.F.D. 25, Richboro, Pa.

B.S., '14—Leslie Card is instructor in Poultry Husbandry in the Connecticut Agricultural College at Storrs. He gives enthusiastic reports of the poultry work with the experimental flocks.

'14.—R. C. Shoemaker is secretary in rural community Y.M.C.A. work in Mount Holly, New Jersey.

W.P. '14, '15.—H. E. Botsford is teaching in the Petersham High School, at Petersham, Mass. He is in the Educational Department.

'14, B.S.—W. A. Hutchinson and G. S. Rose have rented a dairy at Amenia, N. Y., which they will run jointly.

'14, B.S.—R. K. Lloyd is assistant horticulturist at the Mississippi A. and M. College, Miss. He is teaching classes in horticulture, pomology, and landscape gardening.

'14, Sp.—C. L. Mason has secured a good position with the Vermont Academy at Saxton’s River, Vt. While acting as a member of the instructing staff of the academy, he superintends the management of the 200 acre farm owned by the academy.

'15, Sp.—Glenne W. Rugg is manager of the farm of L. D. Conley at Ridgefield, Conn.

Continued on page 756
Fruit, Stock and General Farms Acreage Property

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- 45 acres, bearing fruit, on Hudson, 10,000
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tein. Wonderful results are realized
from its use as a feeding commoditv

Write for Prices

How Types of Farming in New York State
are Determined
(Continued from page 729)
where the soil is not most favorable
for wheat.
Rye is less exacting. It can be
grown where the soil is too poor or
the season too short for wheat. The
high value of rye straw for stable
bedding in cities and for various com-
mercial uses together with the relative-
ly high cost of transporting it, in-
duces rye production in counties near
New York City.
All these factors combined, de-
termines where wheat and rye have a
place in the type of farming. It is
not a matter of choice or custom on
the part of the farmers so much as it
is a result of their efforts and the
efforts of the preceding generations
to make as good a living as possible.

Buckwheat yields best on the best
soils of the State, but more than
three-quarters of the 1909 acreage
was grown on the poorest soils. Com-
petition with other crops and its abili-
ty to endure hardship are the princi-
pal factors in deciding where buck-
wheat shall be grown. In sections
where corn, potatoes or beans are at
all important, buckwheat is little
grown because it interferes at planting
time with these crops and more or
less at harvest time with beans, wheat
planting and corn silage. At usual
prices and with usual yields it does
not pay so well and is omitted. But,
on farms with soils unfavorable and
seasons too short for these crops,
buckwheat can be grown fairly well.
Hence, it is a prominent crop on the
hill farms of southern and eastern
New York. It is not the crop, the
farmers of these regions choose, but
rather one of the few that can be
grown.

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BOOK REVIEWS

Recent Publications Which Give the Latest Information on Popular Subjects.

**PRACTICAL TALKS ON FARM ENGINEERING,** by R. P. Clarkson, B.S., Professor of Engineering, Acadia University, Nova Scotia. Published by Doubleday, Page and Company, Garden City, New York. Price $1 net.

The author of this volume has been for years consulting expert on engineering matters of the Rural New Yorker. The advice is exceedingly practical to farmers and has been written in answer to real questions of farmers about real problems. Chapters are devoted to such subjects as water supply, sewage disposal, fencing, drainage, irrigation, heating and lighting, farm tools, lightning rods, cold storage and numerous other subjects of interest to the agriculturist. The book is profusely illustrated and would make a valuable addition to the farm library.


Written by a man who is so deeply interested in the practical economic phases of entomology, this book should be of especial value to the house wife. It deals in a large part with the relations of insects to disease. There are many valuable pages, however, which deal with insects which are harmful to man in other ways, such as those which injure wood, clothing and food. There are many valuable illustrations.


This is a new edition, revised and rewritten throughout and embodying all the latest information on fruit-growing including accounts of the most recent practices and discoveries.

The different kinds of fruits, the heating of orchards to protect them from frost, the treatment of diseases, the planning and laying out of orchards and the topic of fertilizers are all thoroughly discussed. The illustrations are now being made from hand drawings especially executed for the issue.

**AN AMERICAN FRUIT-FARM,** by Francis Newton Thorpe, Member of the State Horticultural Association of Pennsylvania. Published by G. P. Putnam Sons, 2-6 West 45th St., New York City. Price $2.50 net.

This volume is an illustrated record of successful fruit-farming for more than a quarter of a century. It adheres closely to experience, with valuable explanations and comments, constituting a reliable treatise on the subject of horticulture. The author, a man of wide observation and experience, tells how to select land for a fruit-farm, and what to do after the selection,—how to prepare the land, how to plant the fruit-stock, how to care for it under cultivation. He goes further: he relates the obvious results of successful horticulture—profit and pleasure.

Recent Trustees Meeting Brings Important Developments to the College of Agriculture

Continued from page 737

**FISCAL MATTERS.**

The Dean reported that the legislature had allowed increases for the College of Agriculture aggregating $129,557: the items covered by this increase include cost of maintenance, $66,557; summer school, $8,000; deficiency contingent item, $10,000; heating plant $35,000; grading roads and walks, $10,000. The regular appropriations for the college amount to about $600,000.
The estimates for appropriations were this year submitted in detailed printed form and noted all of the increases or decreases, and gave a reason for each recommended change.

The new act provides for one additional professor, three assistant professors, three new instructors, and sixteen assistants in the general staff, and one assistant professor and one new assistant on the extension staff. In connection with co-operative relations with the federal government it is shown that federal appropriations available for use in the state in connection with agricultural education during the coming year will amount to about $80,000, $33,000 of which is for extension work under the Lever Act, and the remainder under the Nelson, Hatch, Adams, and other funds.

FEDERAL CO-OPERATION.

Plans have been outlined for co-operative work with the federal government under the various projects which have been approved by the University and by the secretary of agriculture. All of the extension work is co-ordinated under a system of projects and administered through the extension department of the college. These projects include: Demonstrations through the rural school in which the extension work of the college will be conducted through the principal of the school, instruction and demonstrations in the control of insects affecting various crops, demonstrations among the farmers for the improvement and fertilization of field and forage crops, the conducting of demonstration schools in agriculture and in household management, instruction and demonstrations in business methods on the farm, and instruction in fruit culture.

STATE CO-OPERATION.

Plans were ratified for co-operative work with various state agencies which would lead for example toward the training of teachers for rural high
College Men’s Headquarters at Panama-Pacific Exposition in Old Faithful Inn, Yellowstone National Park Exhibit of Union Pacific System.

Here an entire section has been set aside for headquarters of the Alumni and under-graduates of the great universities and colleges.

It will be the only place on the Exposition grounds where information concerning visiting college men can be had.

Both Expositions, Denver, Colorado Springs and Salt Lake City, all included in the one low fare.

For slight additional expense the Great Pacific Northwest may be visited. Choice of boat or rail trip Portland to San Francisco.

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Union Pacific R. R.
Omaha, Nebraska

Schools to work with young people in the organization of clubs and agricultural contests, this latter to be known, possibly, as junior extension work.

A great deal of this cooperative work will be done in connection with the state educational authorities, with the secondary schools throughout the state, particularly those teaching agriculture, and with the state experiment stations.

INFORMATION SERVICE.

Dean Galloway reported what the Information Service had accomplished in popularizing practical information through the agricultural and rural press. He states that its primary object was to make use of the state, not for the exploitation of the institution or any individual or department, but for the dissemination of facts which had timeliness and helpfulness for the farm and the farm home. He showed that the prime motive of this service is to benefit the one who receives the information, not the one who gives it.

A statement presented by the Dean showed that the circulation of this news matter had gained steadily from something over a million separate printed impressions in January, the first month that it was started, to nearly seven million in April, a total of more than fifteen million. These figures are from the actual returns of newspaper clippings to the college, and are based on the circulation of the papers in which the items appeared.

BUSINESS SYSTEM.

The trustees approved the system which has been adopted for systematizing and centralizing the business of the college. This involves a uniform system of accounting for all of the departments, with an itemized, detailed report on the various sources of income within these departments. All bills for collection are handled by the central business office which keeps a full set of records with references to the detailed records of the departments. The system also provides for detailed monthly and annual balance sheets which show exactly the cash receipts, the outstanding accounts,
and the amounts expended for each department of the college.

**MISCELLANEOUS BUSINESS.**

A plan was ratified for the exchange of instructors between Cornell University and the University of Wisconsin. This plan was proposed by Dean Russell of Wisconsin, and contemplates the interchange for one or two terms of instructors of the same grade in similar departments in order that the men selected for these exchanges may obtain a wider point of view through association of men and methods in other institutions.

The new building now occupied by the Department of Soil Technology and other departments, which has been generally known as the new soils building, was given the name of Caldwell Hall. This action is in honor of Professor George Chapman Caldwell, who was professor of Agricultural Chemistry in Cornell University from 1868 to 1903, and chemist of the experiment station from the time of its inception up to 1903.

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Mills: BUFFALO, N. Y.

J. J. Campbell
General Sales Agen
Hartford, Conn.

The Lay out of a Farmstead
(Continued from page 722)

dulge in over-much. There should be more shrubbery planted in masses everywhere than we find. It is the easiest way to improve a place as well as to care for the bushes. Blooming shrubs like Lilac, Rose of Sharon, Deutzia; Syringa, Weigela, Japanese Barberry, Kerria. Hydrangeas and the other favorite "sure-to-grow" kinds may make up such a mass of shrubs. There may, however, be intermixed with it fine native bushes like the Flowering Dogwood, Judas Tree, Shad Bush, Hawthorns, Sumac, Wild Roses, Azaleas, Mountain Laurel, Redtwigged Dogwood, Nine Bark, Witchhazel, etc.

As for trees, only the long-lived species should be used and they should be allowed plenty of room for growth unless tree masses only are desired. To grow either a tree or shrub in all its perfection of beauty, for its own value merely, set it out by itself. To make the front of the model farm most attractive and effective and easily maintained, frame in with trees and shrubs in groups and beds (masses). By all means plant the base of the house with shrubs. These are merely a few things worth attention in the practical arrangement of buildings and ornamentation of the farmstead. The principles are simple enough. The common trouble is that principles are often lost sight of until the work of detail making is done, then regretfully it is realized that something else should have been done. Always work to a plan—as comprehensive as can be foreseen.

Former Student Notes
(Continued from page 748)

'14, B.S.—Roger H. Cross is engaged in partnership with his brother, in the operation of a newly purchased alfalfa and dairy farm at Fayetteville, near Syracuse, N. Y.

'14, B.S.—Ray Wilcox is now located on a farm at DeRuyters, N: Y.

Where you saw it will help you, them and us.
One Barrel of "Scalecide"
Will Spray as many Trees as Three Barrels of Lime Sulfur

"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the Good Results from Using "SCALECIDE".

Send for our illustrated booklet—"Proof of The Pudding". Tells how "Scalecide" will positively destroy San Jose and Cottony Maple Scale, Pear Psylla, Leaf Roller, etc., without injury to the trees. Write today for this FREE book and also our booklet—"Spraying Simplified". Learn the dollars and cents value of "Scalecide, The Tree Saver".

Our Service Department can furnish everything you need for the orchard at prices which save you money. Tell us your needs.

B. G. PRATT CO., Mfg Chemists
Dept. A 50 Church St., New York

Dixie Brand Cotton Seed Meal

THE CHEAPEST SOURCE OF PROTEIN FOR DAIRY COWS

HUMPHREYS-GODWIN CO. Memphis, Tenn.

MALONEY Guaranteed TREES

An Advertisement to Live Fruit Men

Maloney Trees are guaranteed true to name and free from diseases by the largest nursery growers in New York State—For 30 years we have been in business here in Dansville and today we are able to ship you direct better trees than ever before because we are constantly studying to improve our methods—we recognize our responsibility to the fruit grower and we have this year issued a novel wholesale catalogue that tells the things you ought to know about our business. Write for your free copy. No order is too big or too small for us to handle personally. We're responsible, look up our ratings. Dansville's Pioneer Wholesale Nurseries.

MALONEY BROS. & WELLS
18 Main St. DANSVILLE, N. Y.

Buy from the Manufacturers—High Grade Veterinary Surgical Instruments

2 oz. Dose Syringe $1.00
Dehorners, $6.50 to 14.00 postpaid
Impregnators, $2.50 to 6.00
Per ½ oz. $1.50, doz. $5.00
Capon Sets, $1.50 to $5.00

Write for illustrated catalogue and special cash prices

Haussmann & Dunn Co.

In writing to advertisers please mention The Cornell Countryman
More Eggs

per hen will be an important factor in increasing your profits. After May 1st a few eggs from our trap nested high producing hens will be offered for sale. Ask for information at once. Also ask about the Mid-Season Sale of High Producing male birds for breeding purposes.

A Few of the Cornell Records

<table>
<thead>
<tr>
<th>Eggs laid</th>
<th>Eggs laid</th>
<th>Eggs laid</th>
<th>Total eggs laid 3 yrs.</th>
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<tbody>
<tr>
<td>1st yr.</td>
<td>2nd yr.</td>
<td>3rd yr.</td>
<td></td>
</tr>
<tr>
<td>Lady Cornell</td>
<td>258</td>
<td>200</td>
<td>191</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>171</td>
<td>183</td>
</tr>
<tr>
<td>Cornell Prolific</td>
<td>243</td>
<td>162</td>
<td>146</td>
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<td>Cornell Laywell</td>
<td>205</td>
<td>165</td>
<td>159</td>
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<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>198</td>
<td>225</td>
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<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>186</td>
<td>196</td>
</tr>
<tr>
<td>Cornell Persistent</td>
<td>192</td>
<td>197</td>
<td>178</td>
</tr>
</tbody>
</table>

Department of Poultry Husbandry, N.Y. State College of Agriculture, Ithaca, N.Y.
The Cornell Countryman

Surpasses the Average Farm Paper

BECAUSE:

Circulation—Among the most progressive class of farmers in New York State—graduates of the New York State College of Agriculture.

Uncle Sam proves the college trained farmer receives a 150 per cent higher labor income than the average farmer.

Eighty per cent of the Farm Bureau Agents of New York State are subscribers.

Editorial Material—Articles are contributed by government experts, professors, and practical authorities, the majority of which are published in The Countryman for the first time.

Mechanical Makeup—The covers, illustrations and grade of paper used are of the highest class. The high quality paper affords you an opportunity to illustrate your advertising with excellent effect.

LEHIGH VALLEY RAILROAD

The only line to and from Ithaca, Cornell University with through service between New York, Newark, Philadelphia, Buffalo, Niagara Falls and Chicago. Steel Trains; Observation Parlor Cars; Electric Lighted Sleeping Cars; Buffet-Library Smoking Cars; Dining Cars, Service a la Carte; Stone Ballast.

Automatic Electric Block Signals

COMFORT SAFETY

In writing to advertisers please mention The Cornell Countryman
Keeps All Stock Healthy

Time and again I have proved the value of Sal-Vet for all stock—Hogs, Sheep, Horses and Cattle. I will prove to you its value as a worm destructor and stock conditioner. I don’t want a penny down—simply feed Sal-Vet 60 days at my risk—then pay if I have made good my claims. I don’t want a cent until you have fed Sal-Vet and seen with your own eyes what it will do for your stock—how it will make them thrifty, sleek and healthy.

Send No Money—Just the Coupon
Tell me how many head of stock you have, and I’ll ship you enough Sal-Vet to last your stock for 60 days. Simply pay the freight charges on arrival, feed as directed. At the end of 60 days report results. If Sal-Vet does not do all I claim, I’ll cancel the charge—you won’t owe me a penny.

John C. Mills, Preston, Minn., Vice-Pres, Minnesota Cattle Breeders’ Association, writes:
“We like your Sal-Vet very much, having used it for over a year with the best of results.”

A. H. Nokes, Springfield, Ill., Treas. of the Holstein-Friesian Breeders’ Association of Illinois, says:
“Will say that we like Sal-Vet fine. It is just the thing to keep stock in fine, thrifty condition. This has been our experience with it.”

The Great Worm Destroyer

Sal-Vet

Send No Money—Just the Coupon
Tell me how many head of stock you have, and I’ll ship you enough Sal-Vet to last your stock for 60 days. Simply pay the freight charges on arrival, feed as directed. At the end of 60 days report results. If Sal-Vet does not do all I claim, I’ll cancel the charge—you won’t owe me a penny.

SIDNEY R. FEIL, President

THE S. R. FEIL CO., Mfg. Chemists, Dept. CC Cleveland, O.

PRICES

<table>
<thead>
<tr>
<th>Weight</th>
<th>Price</th>
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<tbody>
<tr>
<td>40 pounds</td>
<td>$2.25</td>
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<tr>
<td>100 pounds</td>
<td>$5.00</td>
</tr>
<tr>
<td>200 pounds</td>
<td>$9.00</td>
</tr>
<tr>
<td>500 pounds</td>
<td>$15.12</td>
</tr>
</tbody>
</table>

No orders filled for less than 40 lbs. on this 60 day trial offer. Never sold by peddlers nor in bulk; only in Trade-Marked SAL-VET packages. Shipments for 60 days’ trial are based on 1 lb. of SAL-VET for each sheep or hog, and 4 lbs. for each horse or head of cattle, as near as we can come without breaking regular sized packages.
Gun shown above is a No. 4, 20 gauge with 26 inch barrels—the ideal gentleman's gun for field shooting.

You can throw it into a suit case along with your shooting-togs and leave your gun case at home.

We furnish the 20 gauge in all grades hammerless, weighing from 5½ to 5½ pounds and selling from $19.00 up.

The decreased weight of the 20 gauge allows you to travel farther, finish fresher, get into action quicker, kill your game nearer to you and come home feeling as frisky as a kitten.

The speed of our lock was scientifically timed at the University at Cornell and it was found that it took only 1.625 of a second for hammer to fall.

At the time hammer struck it was traveling at the rate of 233 inches per second.

We figure this greased lightning speed will increase your score at trap or kills in the field at least 5 per cent.

Beautiful catalog FREE: 18 grades guns, $17.75 net to $400 list.

ITHACA GUN COMPANY, BOX 123, ITHACA, N. Y.
Hickey’ Lyceum Music Store
105-109 SOUTH CAYUGA ST.
—EVERYTHING IN MUSIC—

BOOK BINDERY
Blank books ruled and bound to order
Have your COUNTRYMAN bound
We bind theses, notes, etc.
J. Will Tree’s 113 N. Tioga St.

THE TOMPKINS COUNTY NATIONAL BANK
135-137 East State Street Established 1836
Capital $100,000 Surplus and Undivided Profits $165,000
Safe Deposit Boxes for Rent

THE FIRST NATIONAL BANK
Cornell Library Building
Capital, Surplus and Profits $350,000 Oldest National Bank
Safe Deposit Boxes for Rent

ITHACA SAVINGS BANK
Incorporated 1868
Tioga Street, cor. Seneca Ithaca, N. Y.

When wanting Quality, Service and Cleanliness
 go to
WANZER & HOWELL, The Grocers
Where you saw it will help you, them and us.
Positive Pasteurization

A GENERAL review of the year’s report will show more and more cities passing pasteurization ordinances. That there existed a real necessity for this no candid person can deny. The microscope tells a true story and when health authorities saw what some milk contained and how effectively proper pasteurization did its work, there was no longer any reason for opposition. The health of communities concerns too much the welfare of the nation to be disregarded by a few who cry, “We will be ruined in a business way.” Conditions today demand pasteurization—it is not an experiment, a hobby or a fad, but an absolute necessity. Why not meet things squarely.

ICE CREAM--The National Dessert

Does our growing list of satisfied customers contain your name? Made where quality counts.

Sanitary Ice Cream & Milk Co., Inc.

701 West State St. ITHACA, N. Y. Both Phones 912

If you desire for your suit a good CLEANING AND PRESSING, also SUITS MADE TO ORDER at a reasonable price, or drill suits come to

“RIETER,” the Eddy St. Tailor

321 EDDY ST. Ithaca Phone 421-C

D. S. O’BRIEN

222 N. Aurora St. MARKETS 430 N. Cayuga St.

Dealer in Fresh, Salt and Smoked Meats
Poultry and Game in Season

D. S. O’BRIEN

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The "Short Line Limited" between Auburn and Ithaca

New York State College of Agriculture at Cornell University

THE DEPARTMENT OF ANIMAL HUSBANDRY

BREEDS, Percheron Horses, Holstein, Jersey, Guernsey, Ayrshire, Short Horn Cattle, Dorset, Shropshire, Rambouillet Sheep, Cheshire Swine.

Regular Public Sale of all Surplus Young Stock.

Friday of Farmers' Week each year

No Stock Except SWINE Sold at Private Sale

DANIELS & COOK, Druggists
Corner College Ave. and Dryden Road

We Do Your Mending Free

Forest City Laundry
E. M. MERRILL

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College, Fraternity and Commercial Printing

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Pure Drugs Accurate Prescription Work Toilet Articles

A. B. BROOKS & SON, Pharmacists
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Where you saw it will help you, them and us.
Wise THE PRINTER

is at your service for all classes of
Fine Printing, Engraving, Etc.

Buffalo St.—Next to Post Office
ITHACA, N. Y.

Carr & Stoddard
High Class TAILORS

Note—if you desire a medium price suit anywhere from $20 to $30, we ask you to look this Special Department over.

Corner Seneca and Aurora Sts.

ON THE HILL

The Palace Laundry

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Fred C. Barnard, Propr.

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The Oldest and Largest Drug Store in the City.
Supplies for Agricultural Students a Specialty

The ROBINSON STUDIO, Inc.
214-216 East State St.
Senior Class Photographers

ANDRUS & CHURCH

BOOKSELLERS, STATIONERS, PRINTERS
AND BOOKBINDERS
ITHACA, N. Y.

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CONLON—Photographer
HIGH-GRADE WORK ONLY
Opposite Tompkins Co. Bank       Bell Phone 173-W

The BARBER SHOP
Sharp & Kelsey, Props.

Why Don't You Join the Big Army?
of Satisfied Customers and have Your Clothes Cleaned
by the NEW PROCESS. IT CLEANS CLEAN.

Modern Dry Cleaning and Pressing Works
W. F. FLETCHER CO., Inc. 103 Dryden Road
"Who Light the Way to Good Cleaning."

NORWOOD LAUNDRY CO.
High Grade Laundry Work
Good Work—Prompt Delivery
107 NORTH ALBANY ST.

The Modern Method Laundry
JOHN REAMER, Prop.

We keep a line of diamonds and jewelry and do all kinds of repairing neatly at:

KOHM & BRUNNE
THE LATEST STYLES AT MODERATE PRICES
TAILORS 222 East State Street

Heggie's Jewelry Store
136 East State Street

Where you saw it will help you, them and us.
SPECIAL OFFER

THE CORNELL COUNTRYMAN, 1 year - - - - - - - - - - - - - - - - $1.00
NEW YORK STATE RURAL PROBLEMS, Vol. II, By L. H. Bailey - - - - - 1.00

BOTH FOR $1.50
Offer good until June 20th

THE CORNELL COUNTRYMAN

Ithaca, N. Y.

COLLEGE GIRLS will find a Wide Variety of
DRY GOODS at the TODD COMPANY
120 EAST STATE STREET

PETER SCUSA, Modern Shoe Repairing
Shoes Called For and Delivered
405 EDDY ST. Ithaca Phone 428-C 405 COLLEGE AVE.

Ivy Corsets
A Corset for Every Figure
and one for Every Purse

Sold by
Mills Hairdressing and Corset Shop
119 East Seneca St.
or direct from

The Clinton House
A La Carte Service
6:15 A. M. to midnight

Special Luncheon
12 to 2 P. M.
50c.

Carte Du Jour 12 to 8 P. M.
After Theater Suppers a special' ty
Music Every Evening

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NEARER THAN ANYTHING TO EVERYTHING
WINSTON HOTEL
PENNA. AVE. & 1st ST.
WASHINGTON
D.C.

OVERLOOKING U.S. CAPITOL AND
PEACE MONUMENT

THREE MINUTES FROM UNION STATION,
GEORGETOWN, 14th. & DECATUR ST. CARS
PASS DOOR.

DINING SERVICE UNEXCELSLED
IN WASHINGTON

NEWEST FEATURE, ELECTRIC GRILL
AT POPULAR PRICES, BAR AND GROTTO,
MUSIC.

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RATES WITH BATH $2.00 PER DAY AND UP
" WITHOUT " $1.50 " "

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RATES WITH BATH $3.00 PER DAY AND UP
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SAMUEL GOODACRE, MANAGER
WRITE FOR GUIDE TO WASHINGTON, D.C.

W. H. Sisson
Custom Made Clothes

156 East State St.

New York Life
Insurance Company

C. H. WEBSTER, Agent

OFFICE: Student Supply Store
RESIDENCE: 121 Catherine St.

Both Phones
"If you get it from us it's right."

Buttrick & Frawley
One Price Clothiers and Furnishers

Society Brand, Hickey, Freeman & Michael-Stein Co.'s Clothing handled exclusively. Stetson Shoes, also shoes for rough wear. Mackinaws, Underwear, Sweaters, Etc. Largest and most complete stock in the County. We make suits to your measure.

134 East State Street

Established 1887

Larkin Bros.
Retailing, Wholesaling, and Jobbing Grocers

John Larkin, Proprietor and Manager

ATWATER'S The Big Store with the Little Prices
Everything to Eat—From Soup to Nuts

Either Phone—996

COLONIAL BUILDING

H. J. Bool Co.

House Furnishers
and Manufacturers of
Special Furniture

PICTURE FRAMING a Specialty
Everything for the Student's Room

Factory Store

Forest Home 130 E. State St.

In writing to advertisers please mention The Cornell Countryman
SUMMER SCHOOL

Of the NEW YORK STATE COLLEGE OF AGRICULTURE at CORNELL UNIVERSITY

B. T. GALLOWAY, Dean

The College is beautifully situated on the heights over famed Cayuga Lake and between the gorges of Cascadilla and Fall Creeks.

The work is directed toward instilling a spirit of helpfulness and achievement.

The instruction includes practically all subjects offered in the regular winter terms; certain field studies and demonstrations can be offered more advantageously in summer than in winter. The summer work is planned especially for teachers.

For announcement and detailed information address Secretary, New York State College of Agriculture at Cornell University, Ithaca, N. Y.
HARRISON'S TREES
in Profitable Orchards

Of their own free will and accord these customers have written to us. We ask you to consider the letters, and during the vacation season to make it your business to visit orchards where Harrison trees are growing and fruiting.

Here at Berlin, in the largest fruit tree nurseries in the world, you will find equally good trees for fall or spring planting. We put the quality into our trees without regard to cost—we ask a fair price, and we give 100 cents to you for every dollar you pay us. Remember, cheap trees are an expense.

"Out of the 1,000 peach trees purchased of you in 1910, I lost less than a dozen trees. I don't think you could find a finer orchard in Monroe County. 568 miles would seem a long distance to send for trees when I could have them delivered from local nurseries without packing, in an hour's time. My reason for sending to you for trees should be obvious to anyone." CHARLES SPEARS, Barnard, N. Y.

"I have never seen cleaner, healthier or thriftier stock from any nursery in any locality. It has been my experience and observation that the best place to propagate a tree or any other plant is where it grows best; the young trees certainly could not grow better than they do with you. The Northern Spy tree in Michigan will be a Michigan Northern Spy no matter where the tree was propagated, and the better start it has in the nursery the better tree it will make after planting. I might add that I have found your firm both liberal and honorable. You were sold out of one variety of apples I wanted, and that convinced me that I could depend upon your trees being "True to Name." I am a bit suspicious of nurseries who are never out of any variety." FRANK E. FORD, Eaton Rapids, Mich.

"We really think that these are the finest trees we have ever received and should make our farm worth several thousand dollars more in the next five years. We have not found any dead excepting three that were bitten by rabbits very soon after planting. The peaches (200) also seem to be all right, and in all we think that there may be no replanting to do. This seems too good, but we've never seen trees do like these before. They started buds very slowly then came out and grew right off the reel." R. W. MCLENEGAN, Scarlet's Mill, Pa.

"Within the last three years I have handled about six carloads of your nursery stock and it has given both myself and my customers good satisfaction. I do not think that the losses have averaged one percent. My own orchards are planted with your stock; the first trees were planted in the Spring of 1904 and bore a fair crop the third year. That orchard of about 500 trees has never missed a crop since coming into bearing, and has produced a good yield. I now have 25 acres and I do not know of a single tree not true to name." E. A. PIERCE, Vineland, N. J.

If you do not have our catalogue of Fruit and Ornamental Trees send for it today—we have been told that it is the most practical book of the year.

Harrisons' Nurseries
C. W NELL AVENUE, BERLIN, MD.
DE LAVAL
CREAM SEPARATORS
are used exclusively by
98% of the World's Creameries

TEN YEARS AGO THERE WERE a dozen different makes of creamery or factory separators in use. Today over 98 per cent of the world's creameries use De Laval Separators exclusively.

IT MEANS A DIFFERENCE OF several thousand dollars a year whether a De Laval or some other make of separator is used in a creamery.

EXACTLY THE SAME DIFFERENCES exist, on a smaller scale, in the use of farm separators. Owing to the fact, however, that most farm users do not keep as accurate records as the creameryman, or test their skim-milk with the Babcock tester, they do not appreciate just what the difference between a good and a poor separator means to them in dollars and cents.

NOW, IF YOU WERE IN NEED OF legal advice, you would go to a lawyer. If you were sick you would consult a doctor. If you had the toothache, you would call on a dentist. Why? Because these men are all specialists in their line, and you rely upon their judgment and skill.

WHEN IT COMES TO BUYING A separator why not profit by the experience of the creameryman which qualifies him to advise you correctly? He knows which separator will give you the best service and be the most economical for you to buy. That's why 98 per cent of the world's creameries and milk dealers use the De Laval exclusively.

THERE CAN BE NO BETTER RECOMMENDATION for the De Laval than the fact that the men who make the separation of milk a business use the De Laval to the practical exclusion of all other makes of cream separators.

A De Laval catalog to be had for the asking, will make plain the many points of superiority of De Laval Cream Separators

The DeLaval Separator Company
165 BROADWAY, NEW YORK
29 E. MADISON ST., CHICAGO

50,000 Branches and Local Agencies the World Over

ANDRUS & CHURCH, Printers, Ithaca, N. Y.