# APPLICATION OF GROUND LIMESTONE FOR ACID SOILS

**Results of Experiments by Prof. Cyril G. Hopkins, Chief in Agronomy and Chemistry, Illinois Agricultural College.**

There are two principal affects produced by using lime on soils: One of these is to correct the acidity of the soil, and the other is to decompose the soil itself. To correct the acidity of sour soils is certainly a very desirable and profitable use of lime. Clover, alfalfa, alsike, cowpeas, soybeans, and many other legumes will not thrive on soils which are strongly acid. To be sure such crops can be made to grow on acid soils by liberal applications of farm manure or other complete fertilizers but the nitrogen-gathering bacteria of the legume plants do not properly develop and multiply in acid and consequently the legumes do not have the power which they should have to

First Year Clover (Mostly Foul Grass) With no Special Soil Treatment.

accumulate large quantities of atmospheric nitrogen by means of the bacteria which inhabit, or should inhabit, their roots. Furthermore, the process which is termed nitrification by which the nitrifying bacteria transform the insoluble organic nitrogen, in farm manure and plant residues, into soluble nitrate nitrogen the form in which it becomes available as plant food, is greatly promoted by the presence of lime and retarded by acid conditions.

It will thus be seen that the use of some form of lime for correcting the acidity of soils and thus encouraging the growth of clover and other legumes with wonderful power to enrich the soil in nitrogen is certainly good farm practice.

First Year Clover ("Knee Deep") With Lime Treatment.

Any form of lime which is finely divided and can be thoroughly mixed with the soil will serve to correct the soil acidity, whether it be ground limestone, marl, or chalk, or fresh burned lime, water-slacked lime, or air-slacked lime.

The other effect produced by lime, the effect for which it has been most used in past ages, is the decomposition of the soil itself. In this decomposition the organic matter of the soil is destroyed with the liberation of nitrogen and phosphorus held in organic form and the mineral particles of the soil are disintegrated with the liberation of some plant food elements, as potassium and phosphorus held in inorganic form. This effect is produced by fresh-burned lime or fresh-slacked lime.

Thus it will be seen that the first effect of lime, the correction of soil acidity, results in a building-up process through the increased growth of legumes and nitrogen-gathering bacteria; while the second effect, the decomposition of the soil, is in all respects a destructive process, serving only to liberate and reduce the stock of plant food stored in the soil. Whether this second effect is desirable will depend upon the nature of the soil itself.

On soils which are exceedingly rich in organic matter, such as peaty soils, and other swamp soils, it would seem altogether rational to make use of caustic lime to hasten the decomposition of the soil and consequent liberation of nitrogen, if such treatment is necessary.

As a general rule we should use lime only to correct the acidity of the soil, and this is necessary only where there is difficulty in obtaining a good stand and luxurious growth of a leguminous crop, such as red clover. As to the form of lime to use for this purpose, the farmer must be governed somewhat by the cost of the material. Fine-ground lime will be both the best and the most economical form of lime to use wherever it can be obtained. If caustic lime be used we should make special provision to maintain the humus in the soil.

It is well to have some regular plan so that the application of limestone shall fit into the work with the rotation of crops. Thus, one may practice a five-year or six-year rotation, as follows:

First year—corn.
Second year—oats, cowpeas or soybeans.
Third year—wheat (with clover and grass).
Fourth year—meadow for hay.
Fifth year—meadow or pasture.
Sixth year—pasture.

There should be as many fields, of approximately equal size, as there are years in the rotation, so that every crop is represented every year. Thus, every year there is a field in pasture on which the manure can be spread as fast as it is made; and, if rock phosphate is used, it should go on with the manure, to be plowed under for corn. The limestone may well be applied in the summer of the second year, after the land is plowed for wheat. In the further preparation of the ground the limestone becomes mixed with the surface soil, and the packing of the soil in spreading the limestone and in subsequent preparation is likely to be beneficial for the wheat crop. Wheat is usually helped by lining and the lime-stone will be thus in the soil to benefit the clover to be seeded the following spring.

# WHAT MANURE DID FOR ONE FARM

**By PROF. HARRY SNYDER.**

My attention was recently called to a farm in Dakota county, Minnesota, where, when the country was being settled, a strip of apparently poor land was passed over as worthless for grain production. Later it was homesteaded by a settler who came in a one-horse outfit. Instead of raising grain, this man started in on a small scale to feed live stock. Screenings and grain could be obtained for the hauling. The manure was judiciously used and the soil responded to this method of farming. In a few years upon this apparently poor soil larger crops were produced than upon the surrounding wheat lands. To-day it is one of the most productive farms in the county, and its fertility is the result of farm manure.

Farm manures are valuable because they add new stores of fertility to the soil. They change the inactive plant food to more available forms through the production of humates which are utilized by crops as foods. They improve the physical properties of soils, make them warmer, more responsive to cultivation, and regulate the water supply for crop growth. They add to the permanent crop producing power of the soil and regulate the supply of plant food by causing disintegration and other changes to take place. They aid in producing forage crops which contain the largest amount of protein and other available nutrients. Manured lands produce not only larger but more valuable crops.

**No Adulteration for Him.**—The man that has honey syrup from his own hives knows it is not adulterated.

# QUIET EDWIN GOULDS.

**MEMBERS OF FAMILY WHO SHUN GILDED SOCIETY.**

**Long Since Wearied of Smart Set, They Live Unostentatiously at Ardsley, Which Mrs. Gould Says Is the "Rest Spot" of America.**

New York.—How little is heard of the Edwin Goulds! Of the many members of the Gould family they are the least often met in the public prints, and the remaining few quiet, old-fashioned members of the 400 genuinely honor them for their unobtrusiveness. Edwin Gould is essentially a man of retirement, and one who never looks for homage for his millions. He is unlike the vast majority of the social stock to which he belongs, in that he estimates his fellows by their mental worth and not by the weight, size and fullness of their coffers. But how much of his success is due to the wise influence of his wife? Those who know the man best say it was a fortunate day for him when he wedded Sarah Shrady. The Goulds live without ostentation most the year in Ardsley. They have long since tired of European travel; they are among the limited few of our multimillionaires who see beauties in our country equal to the best the Alps or any of the garden spots of the continent can afford.

Mrs. Gould is a nature lover, and she finds ample opportunity to invite her inclination in this direction in and around Ardsley. Her favorite pastime, however, is golf, although occasionally she is seen on the Ardsley tennis courts. If golf ever is to resume its sway among the smart set it will be due largely to the influence of Mrs. Gould and the little circle of which she is the leading figure. Ardsley is a nook that simply drives the resident afield for athletic sport. In this it is the reverse of Newport, sitting lazy by the sea, and with its level stretches of highway luring one to the listless luxury of the upholstered automobile. It is only in the early spring and the late fall that the Newport atmosphere is really bracing, while every month in the year there is snap and life in the Ardsley air. The place draws coolness from the Hudson, and it is saved from monotony by its well-wooded hills. It is not strange that it has been necessary to draw restrictions tighter to keep the Ardsley reservation from being overrun with restless millionaires and their families seeking a haven.

It was Mrs. George Gould who, after a visit to the Edwin Goulds, said that Ardsley was the "rest spot" of America. Of course, it might be said that Mrs. Gould spoke only for the wealthy; the poor find cramped area of a park; still her opinion is of interest as indicating how little of rest and content is the lot of the men and women with limitless money to spend. Probably what Mrs. Gould meant was that in Ardsley there was no suggestion of prodigal outlay, no rivalry of millions, no ridiculous competition in absurd entertainments. Not long before the George Goulds sailed for Europe a young matron complained of wearness as a result of the endless round of the winter season. "Go to Ardsley," was Mrs. Gould's advice, given laughingly, but with a good deal of earnestess. And "Go to Ardsley" bids fair to pass into a slogan among the 400, if a slogan ever could find refuge in so poor a haven. The so-called elect of the 400 are born imitators, or rather mimics, and within a week, through

MRS. EDWIN GOULD.
(Member of Famous Family Who Leads a Quiet Life.)

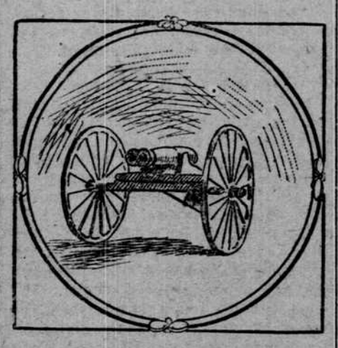
all the different layers of the odd social fabric, every mention of headache or ennui was followed by the call "Go to Ardsley!" Well, there is more in the remark than the thoughtless may discover. The secret is known to the Edwin Goulds, and Mrs. George Gould probably had more than an inkling of it when she gave such apt expression to Ardsley's rural charms and decided to forsake Lakewood.

But how long will Ardsley stand against the northward march of the city? How long, too, will the William K. Vanderbilts and the Harry Payne Whitneys stand against the spread of the city monster toward their Long Island estates? The millionaire brethren it must be known will not wait until the real estate dealer comes knocking on their gates. They will take flight at the first sign of the invading speculator.

## A HISTORIC CURIOSITY.

**Only Double Barreled Cannon in the World at Athens, Ga.**

Atlanta, Ga.—The only double barreled cannon in the world is one of the historic curiosities of Athens, Ga. There is a history of unique interest that goes along with this old cannon. Besides being the only double barreled "shooting iron" of this kind ever



The Double-Barreled Cannon.

invented, it was conceived with a peculiar idea by the inventor, John Gilleland, a member of the Mitchell Thunderbolts, a local military company at Athens during the war. The Mitchell Thunderbolts was a company composed of men too old for active service in the field, and was organized purely for home defense.

Mr. Gilleland, the inventor, believed that with a cannon of the double barrel pattern he could mow down Yankees by the hundreds. He had his cannon cast at the Athens foundry, and, when finished, it was hauled out to the outskirts of the city, where a test was made. One test was entirely sufficient to demonstrate that the cannon was a rank failure. A 50-foot chain, with the ends attached to two cannon balls was the charge. The balls were rammed into the cannon good and hard. It was the inventor's idea that when the cannon was fired the chain would stretch taut and cut down everything within its length. When it was properly loaded it was touched off with great ceremony. One of the balls got out a little ahead of the other, and the devil and Tom Jones was to pay. It had a kind of circular motion, plowing up about an acre of ground, tore up a corn field, mowed down saplings, and the chain broke. One of the balls killed a young cow in a distant field, while the other knocked down a chimney from a log cabin. The members of the Thunderbolts who went out to witness the test scattered as though the entire Yankee army had turned loose in that vicinity.

That one test was enough to convince the inventor that his double barreled cannon was more disastrous to the men behind it than to the enemy in front. It was drawn back to the city and was never used again except to celebrate Democratic victories, the number of times for this purpose being limited, except in state campaigns. Several years ago the old cannon disappeared from in front of the city hall, and it was found in a junk shop, from which it was rescued, and after being mounted and placed in the little park on College avenue, opposite the federal building, where it now stands—one of the most interesting relics of the civil war.

**Shakespeare and Cervantes.**

It is perhaps one of the most remarkable coincidence in all literary history that April 23, 1616, should have been the death day of the two greatest geniuses of their time, or, indeed, of any time—Shakespeare and Cervantes. But it is doubtful whether they ever heard of each other, just as Burns and Schiller, who were born in the same year, twinkled, to use Carlyle's fine phrase, like bright particular stars in opposite firmaments, and never mingled their rays. It does not appear that Shakespeare knew any Spanish, and as the earliest translation — Shelton's — of "Don Quixote" began to appear in 1612, after the author of "Hamlet" had retired to Stratford, and was finished in 1620, he is not likely to have come under its influence. It was "The Knight of the Burning Pestle" which first betrayed this.

**Annual Loss of Flesh.**

"My class of 50 pupils loses 100 pounds each examination season,"

**Heroic Surgery.**

Natives of Africa have a great belief in the efficacy of fire as a curative agent. When Livingstone's body was being carried to the coast one of the party received a dangerous gunshot wound in the thigh. His companions made a hole in the ground deep enough to take him, seated with his legs out in front. Leaves were bound about the injury, and earth and thick mud heaped over his legs. A bonfire was now made over this mound, and, so that the man might not suffocate from the smoke, they thoughtfully reared a mat in front of his face. By the time that the heat had made its way to the wound the man was in agony and perspiration poured from him. He roared for help and was dug out. The native surgeons now held him fast, while strong men tugged with all their might at the injured limb, then bound him in splints. This was the treatment usual in such cases, and the natives said that it had invariably been perfectly successful for gunshot wounds through a bone.

**A Horrid Suspicion.**

"Maud," he said, as the carriage entered the shadowy lane, "Maud are you sure you—you never had any man's arm about your waist as mine is?"

"No, George, I never did," she murmured; "I never, never did! Why?"

"Oh, nothing," he replied, "only I wondered whether it was instinct or experience that made you take the reins from my hand just as soon as we reached this secluded spot."—Royal Magazine.

**Unselfish.**

Mrs. Coonley (at the wash tub)—Dat's de man ob it, ebry time! Set around an' smoke while de poo' woman does the wuk!

Mr. Coonley (enjoying his pipe)—But how could we change places, honey, when yo' knows yo don't smoke?—Puck.

**His Plea.**

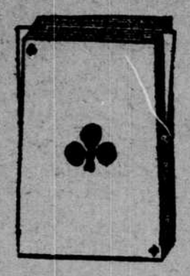
Judge—Prisoner, have you anything to say to the court before sentence is pronounced?

Prisoner—I beg the court to consider the youthfulness of my attorney.

## SIMPLE TRICK WITH CARDS.

**Will Mystify Ordinary Spectators, and Is Not Easy to Detect.**

One of the simplest tricks to perform, but one not easily detected, can be executed by using a tapered deck of cards as shown in the figure. A cheap deck of cards is evened up square, fastened in a vise and planed along the edge in such a manner that



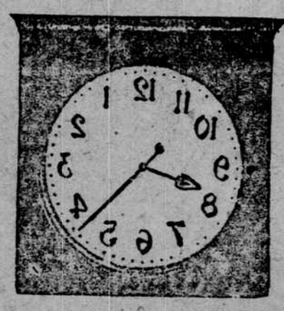
all the pack will be tapered about one-sixteenth inch. This taper is exaggerated in the illustration, which shows one card that has been turned end for end.

It is evident that any card reversed in this way can be easily separated from the other cards in the pack, which makes it possible to perform the following trick: The performer spreads the cards out, fan like, and asks an observer to withdraw a card, which is then replaced in any part of the pack. After thoroughly shuffling the cards the performer then holds the deck in both hands behind his back and pronouncing a few magic words produces the card selected in one hand and the rest of the pack in the other. This is accomplished by simply turning the deck end for end while the observer is looking at his card, thus bringing the wide end of the selected card at the narrow end of the pack when it is replaced. The hands are placed behind the back for a double purpose, as the feat then seems more marvelous and the observers are not allowed to see how it is done.

## FOR THE BARBER SHOP.

**Inverted Clock a Boon to the "Man in the Chair."**

Every barber shop has a clock which is invariably placed on the wall opposite the big mirror which faces the customer in the chair. The clock face is reversed as seen in the mirror, and it is a severe strain on the eyes to figure out the correct



time. A jeweler in Glendine, Mont., has now invented a sane clock for barber shops. The figures on the dial are reversed, and the hands move just opposite to those of ordinary clocks. The result is the reflection in the glass is so "you can understand it." To demonstrate, hold this page in front of a mirror and read the time of the clock in the illustration.

## OTTER CAME HOME AGAIN.

**Pet Returned to Owner After Brief Hour of Freedom.**

A curious instance of animal instinct and attachment in an otter is related by a Cork correspondent of the London Field. A few months ago in that city a man caught a live otter. Bringing the animal home, after some time, he succeeded in taming it, and trained it to fish.

One day he took it to the river for a swim, and while there it killed some fish, but succeeded in getting off the strap to which it was attached. After waiting some hours in a vain endeavor to induce the animal to leave the water the owner gave up in despair and returned home.

Late that night, while in bed, this man heard a scratching at the front door of his cottage, and to his great surprise, when he opened the door, in walked the otter, which he then secure. The most remarkable feature of this story is the fact that this man lived about a mile from the river and that his cottage was one in a row.

**Odd Place for Bird's Nest.**

A thrush has built her nest at the back of the neck of the sculptured angel on the memorial to William Thimos Kine, the author, in St. Margaret's churchyard, Keddington, near Louth.

The memorial is protected by a wire cage, through which the bird managed to find its way. The cage also protects the birds, for no boys can possibly get at the nest, which now shelters the mother bird and five little thrushes.—London Evening Standard.

**Routed by Snapping Turtles.**

As John Patterson, a huckster, was driving into town from Darlington this morning he came upon a drove of 15 or 20 snapping turtles crossing the road, says a Beaver Falls correspondent of the Pittsburg Despatch. Thinking a few of them would meet with ready sale he attempted to catch them, whereupon the turtles showed fight, and, hissing angrily, made for him with outstreached heads and snapping jaws.

Patterson hastily got back into his wagon, turned his horse and beat a retreat. He says most of the turtles were as large as a washtub. He drove into town by another route.

**Jackdaw's Thefts.**

Following the loss of numerous wooden labels attached to the plants in the city park the Turro Corporation issued numerous solemn warnings to children, says the London Daily News.

At a chapel near at hand, however, a large pile of the missing labels has just been found under a hole in the roof, having been carried there by a jackdaw.

# EXTENT OF THE FRUIT INDUSTRY IN THE UNITED STATES

**People Should Eat More Fruit Than They Do—By C. F. Langworthy, Ph. D., U. S. Department of Agriculture.**

As shown by statistics based on the results of dietary studies of nearly 400 American families, fresh fruits make up 3.8 per cent. of the total food and supply 2.5 per cent. of the total carbohydrates. Similarly dried fruits furnish 0.6 per cent. of the total food and 1.2 per cent. of the total carbohydrates. The values for fruits as a whole, therefore, are 4.4 per cent. of the total food material and 3.7 per cent of the total carbohydrates. These figures are not large in themselves, yet compare favorably with the values for different groups of vegetable foods. Thus the same compilation shows that vegetables, other than legumes, potatoes, and sweet potatoes, furnish 6.2 per cent. of the total food and 1.7 per cent of the total carbohydrates of the average American diet.

Besides the fruit consumed at home a great amount is exported, and there is no doubt that fruit growing is one of the important agricultural industries of the United States, and one which is rapidly developing. The report of the twelfth census shows that the total value of fruit grown in contiguous United States in 1899 was in round numbers $131,099,000, of which orchard fruits made up $83,751,000, grapes, $14,090,000, small fruits $25,030,000, and oranges, lemons, and other subtropical fruits, $8,228,000. Of the individual states, California and New York were the greatest fruit producers, the large acreage of orchard fruits and grapes in these states being prominent factors in the problem.

The progress of fruit production during the decade between the last two censuses is indicated by the gain in the number of orchard fruit trees; the number of these trees in 1900 was 90 per cent. more than the number in 1890.

Of the orchard fruits the apple has decidedly the first place, 55 per cent. of the total number of fruit trees in the United States in 1900 being apple trees, and this fruit making up 83 per cent of the total number of bushels of orchard fruit produced. Judged by the number of trees under cultivation the greatest increase has been found in the case of plums, apricots, and pears, though peaches and cherries also have shown large gains. Of small fruits strawberries, as might be expected, were the most important crop, and raspberries next, 257,438,000 quarts of strawberries and 76,628,000 quarts of raspberries having been grown in 1899.

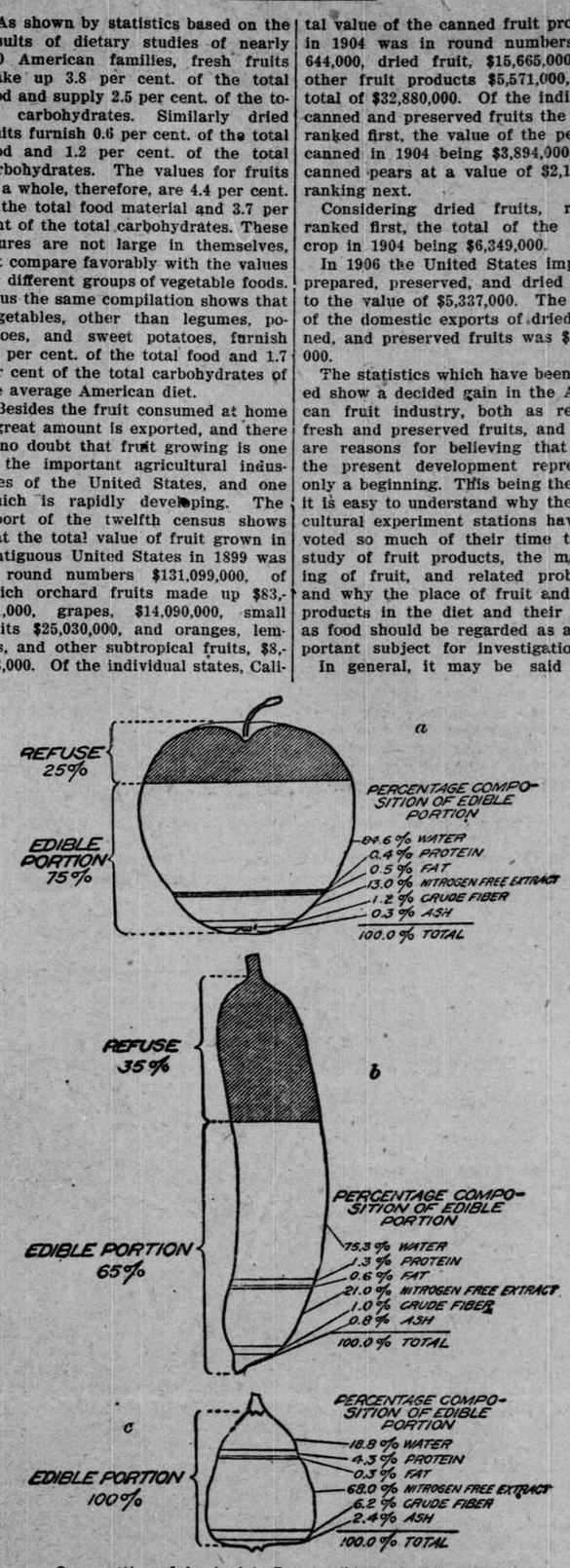
In the case of canned and preserved fruits and similar goods the census returns give later figures than those quoted for fresh fruits. The total value of the canned fruit produced in 1904 was in round numbers $11,644,000, dried fruit, $15,665,000, and other fruit products $5,571,000, or a total of $32,880,000. Of the individual canned and preserved fruits the peach ranked first, the value of the peaches canned in 1904 being $3,894,000, with canned pears at a value of $2,192,000 ranking next.

Considering dried fruits, raisins ranked first, the total of the raisin crop in 1904 being $6,349,000.

In 1906 the United States imported prepared, preserved, and dried fruits to the value of $5,337,000. The value of the domestic exports of dried, canned, and preserved fruits was $7,635,000.

The statistics which have been quoted show a decided gain in the American fruit industry, both as regards fresh and preserved fruits, and there are reasons for believing that even the present development represents only a beginning. This being the case, it is easy to understand why the agricultural experiment stations have devoted so much of their time to the study of fruit products, the marketing of fruit, and related problems, and why the place of fruit and fruit products in the diet and their value as food should be regarded as an important subject for investigation.

In general, it may be said that fruits are wholsome, palatable, and attractive additions to our diet, and may be readily made to furnish a considerable part of the nutrients and energy required in the daily fare. Fresh fruits are dilute foods and closely resemble green vegetables in total nutritive value, but dried fruits and many preserves, etc., are much more concentrated, comparing favorably with some of the cereals and other dry vegetable foods in the amount of total nutrients and energy which they supply per pound. The characteristic chemical constituents of fruits are carbohydrates, and so they are naturally and properly used in a well-balanced diet to supplement foods richer in protein, as cereal grains, legumes, nuts, eggs, dairy products, meats, and fish. Fruits contain considerable mineral matter, and as they are dilute foods they may be added to the diet to supply iron and other mineral constituents without unduly increasing the supply of protein and energy. Since they are bulky and often contain fairly large proportions of indigestible material, fruits stimulate what might otherwise be a sluggish intestine. Intelligently used, fruits are a valuable part of a well-balanced diet and may well be eaten in larger quantities than at present.




Composition of Apple (a), Banana (b), and Dried Fig (c).

# SOME CORN FACTS

**By Purdue (Ind.) College Expert.**

The best yields of corn have been produced by planting in the first third of May.

Late-planted corn has matured in twenty days' less time, as a rule, than the early planted.

Thick planting has produced higher average yield of both corn and stalks than thin planting.

In very dry seasons thick planting has produced less grain, but generally a greater total yield of grain and stalks, than thin planting.

Plowing eight inches deep has produced slightly greater yields of corn than either shallower or deeper cultivation.

Rotation of crops has proved an excellent means of sustaining yields of grain and of conserving soil fertility.

A liberal application of fresh horse manure has not been fully exhausted by a dozen successive crops of corn.

Fresh horse manure has produced an aggregate increase in yield of corn of about 120 bushels per acre in twelve years.

Heavy dressings of manure and commercial fertilizers have not made profitable returns in yield of corn in dry seasor

Different varieties of corn show a very wide range in proportion of stalk and ear, which makes it easy for the stockman to select a variety that will produce a large or small percentage of grain.

**Keep Roosters Vigorous.**—Examine the males that head the breeding pens and if they are thin in flesh feed each one meal a day separate from the members of his flock. Sometimes a chivalrous bird will not eat his share of the food if fed with the hens.

**Geese Live on Grass.**—From this time forward geese will obtain a good share of their living at no cost to their owner if allowed to range about the farm. Green grass and plenty of it is one of their most desired foods.

**Rains and Corn Crop.**—Rains in late summer and early fall do not affect the corn crop as to percentage of grain to stalk. A good supply of water at that time increases the proportion of grain to stalk.

**Kill Old Hen.**—A hen without any teeth will scratch the neighbor's garden just as well as the younger hen with a good set of teeth, and she won't lay half as many eggs. Kill her.

**Red Clover and the Bumble Bee.**—Our red clover does not give its honey to the honey bee, but to the bumble bee.