

# MICHIGAN FARMER

AND LIVE STOCK JOURNAL  
PUBLISHED WEEKLY.  
ESTABLISHED 1843.

The Only Weekly Agricultural, Horticultural, and Live Stock Journal in the State.

VOL. CXLV. No. 14  
Whole Number 3882

DETROIT, MICH., SATURDAY, APRIL 1, 1916

50 CENTS A YEAR.  
\$2 FOR 5 YEARS.

## The Unpaid Tenants of Our Farms

By ALFRED T. HALSTED

EACH and every farm has its tenants. Some farmers claim that they manage to get along without help. They don't. Pardon the contradiction—but, all farms are tenanted. In our younger days some of us may have believed in fairies and elves. We would offer this subject as one which the farmer can use to interest the son in the vital problems of rural life. The tenants referred to here are the bacteria and other minute organisms living in the soil. It is this class of tenants that in many instances goes unpaid. All they require of us in return for the inestimable services they render is their sustenance; and yet—throughout this great world of today these soil organisms are almost at the door of starvation.

Prior to the year 1840 people were of the opinion that humus or decayed organic matter of plant origin was taken by crops, directly from the soil, as plant food. They believed, in other words, that plants, like animals, used organic matter as food. At the date previously mentioned, Justus von Liebig presented systematic and rational views on soil fertility. He showed quite conclusively that humus was not used by the plant except as it was first broken down into simple compounds and united with the elements of the soil in the form of soluble mineral salts. Even Liebig labored under the impression that all the changes which took place were purely of a chemical nature.

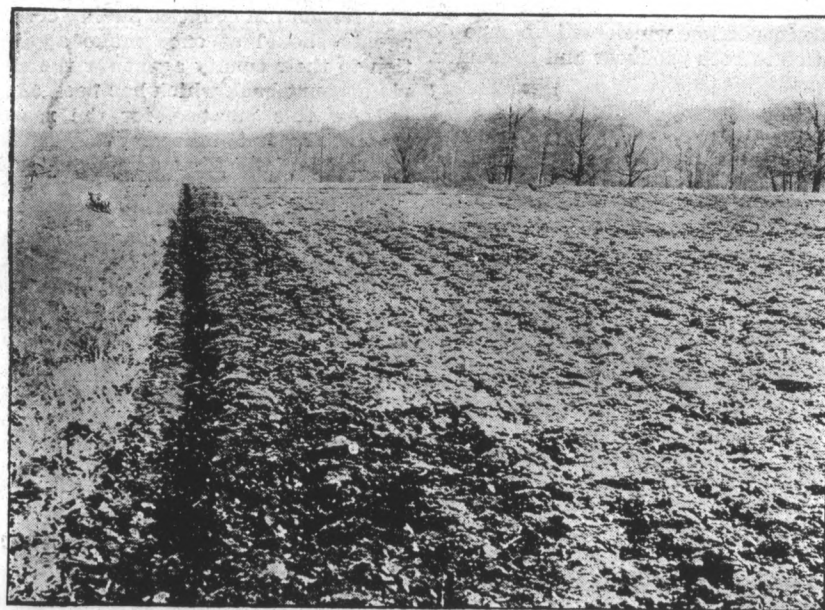
Through tireless work and research it has finally come to our attention that the disintegration of humus is not a chemical process unless it be classed biochemically. The enormous task of breaking up crop residues is dependent upon the action of the micro-organisms of the soil. Experiment has shown that through the action of these organisms carbon is restored to the air as carbon dioxide, and nitrogen is changed into ammonia, nitrites, and nitrates in turn.

A factor of still greater importance that must not escape our attention is that the cleavage products formed, and especially carbon dioxide, act as powerful solvents in weathering or breaking down the rock particles of the soil and making them available for the use of the crops. Microbes are largely responsible for all this. The very welfare of all cultivated and uncultivated plants bears direct relation to the action of these organisms of the soil.

From the most dependable authorities we learn that the greater share of Michigan's soils are well supplied, even rich, in the necessary minerals for crop growth. This gives rise to the

question, "Why can not we raise the bumper crops that our fathers were accustomed to harvesting, if this be true?" To this query there can be but one real answer. The grasping craze for more crops and, in turn, more cash has led us in the past years to be unreasonable and short-sighted. Blinded to the present difficulty we have cropped the soil year after year without putting anything back. We have neglected to feed the soil bacteria, our tenants, and they have gone on strike.

In this world of today a few men are accumulating wealth at the expense of be established to meet all conditions. In order to meet the needs of any given field some modification of these rules, arrived at through a consideration of type of soil, climate, crop, and the like, can be used. Soil organisms are dependent, in their welfare, upon the moisture content of the soil. This factor is influenced by rainfall and the texture and structure of the soil particles. Many soils are improved by systematic drainage through tiling. The drainage of soils deficient in humus is improved by the addition of organic matter.



A Well-drained Soil in Good Tilth is an Ideal Home for Soil Bacteria.

fellow-men. They continue to gain while the others lose. We, as farmers, have to work on an entirely different basis. Only through the welfare of the organisms on which we are dependent can we reap our just gains. Strikes are settled by mediation. Terms are agreed upon and the work proceeds. It would be well for us to consider at length the requirements of soil organisms in terms that will, in the course of time, bring us actual profit. Only a general set of rules can

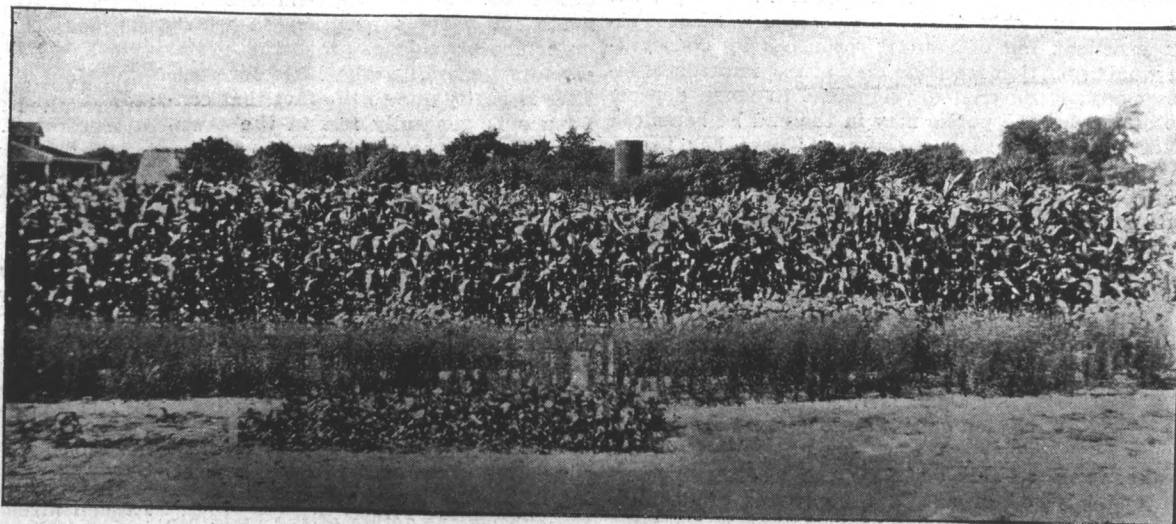
Proper cultivation in the dry season conserves the water supply. Micro-organisms live and multiply in the film moisture that surrounds soil particles. The most desirable condition for plant and bacterial growth exists when about one-half the entire pore space of the soil is filled with water. When a soil becomes water-logged the oxygen supply becomes limited and a formation of toxic products occurs that sickens and eventually kills the desirable organisms.

The production of carbon-dioxide in the decomposition of organic matter is essentially an oxidation process. The action of micro-organisms in this work is limited by the extent of ventilation, or aeration, of the soil. Unless careful tillage is practiced, the packing of soil particles in clay land will limit bacterial action to a shallow layer on the surface. When you have an opportunity, go to a field where clay predominates and a sod was turned under a year ago. Dig up some of the old sod and note its state of preservation. Going to the opposite extreme we find that organic matter disappears even too rapidly in sandy soil, due to increased bacterial action because of an almost unlimited supply of oxygen. Sandy soils leach faster than others. By correcting the deficiency of humus in the soil we have furnished bacterial food and thus have influenced indirectly the available supply of plant food. We have helped to regulate drainage and have improved aeration. The last two points mentioned bear a direct influence upon another factor; namely, soil temperature.

Two other items which influence soil temperature are climate and season. Bacterial growth occurs almost in direct proportion to rise in temperature. As the spring and summer seasons advance the temperature rises. The crops grow and are cultivated. The rise in temperature together with cultivation, stimulates and increases the bacterial growth. In turn the available plant food is increased to meet the needs of the growing crop. Should the crop ripen as cooler days come, a relative reaction occurs in the soil. The soil organisms become less active. Can we find in this paragraph a logical argument in favor of keeping some crop on the field all the time? Unless the available plant food be used it leaches away and is lost. Plant cover crops. Let some of these serve as green manure. Plow them under and you have taken one step toward building up the humus supply in the soil and feeding the soil bacteria.

Should our account with these organisms end here it would pay well to be concerned with their best interests.

They are willing creatures, however, and are continually going one step farther in our behalf. Thinking that our soils are worn out in their mineral content and nitrogen, we have resorted to the purchase of commercial fertilizers. We desire these to contain potash, phosphate and nitrogen. Our argument is that we reap benefit in increased yield. Some soils are deficient in potassium and phosphorus; others are not deficient in these elements, yet



The Short Corn in Center Shows where the Leguminous Crop Failed to Grow the Previous Year.

(Continued on p. 451).



# The Michigan Farmer

Established 1843. Copyright 1916.

## The Lawrence Publishing Co.

Editors and Proprietors.

39 to 45 Congress St. West, Detroit, Michigan  
TELEPHONE MAIN 4525.

NEW YORK OFFICE—381 Fourth Ave.  
CHICAGO OFFICE—604 Advertising Building.  
CLEVELAND OFFICE—1011-1015 Oregon Ave., N. E.  
PHILADELPHIA OFFICE—261-263 South Third St.

M. J. LAWRENCE.....President  
M. L. LAWRENCE.....Vice-President  
L. H. HOUGHTON.....Sec.-Treas.

I. R. WATERBURY.....Associate Editor  
BURT WERMUTH.....Associate Editor  
FRANK A. WILKEN.....Associate Editor  
ALTA LAWSON LITTELL.....Associate Editor

E. H. HOUGHTON.....Business Manager

### TERMS OF SUBSCRIPTION:

One year, 52 issues.....\$5.00  
Two years, 104 issues.....10.00  
Three years, 156 issues.....15.25  
Five years, 260 issues.....25.00

All sent postpaid.

Canadian subscriptions 50c a year extra for postage.

### RATES OF ADVERTISING:

40 cents per line agate type measurement, or \$5.60 per inch (14 agate lines per inch) per insertion. No advt. in series for less than \$1.20 each insertion. No objectionable advertisements inserted at any price.

Mem Standard Farm Papers Association and Audit Bureau of Circulation.

Entered as second class matter at the Detroit, Michigan, postoffice.

DETROIT, APRIL 1, 1916

### CURRENT COMMENT.

**Milk Inspection Methods.** In another column of this issue appears a synopsis of a talk given by one of Michigan's prominent dairymen at the Lenawee County Round-up Farmers' Institute, in which several very pertinent questions are asked. A member of our staff was present at the institute in question, and in view of the findings made public in the New York bulletin mentioned in the article, which have since been given careful consideration, we have considered it a favorable and auspicious time for a general discussion of the milk inspection problem from all angles. By way of opening this discussion, the dairy farmer's side of the question has been first presented by the publication of this address as above noted. In a subsequent issue the feasibility of making adequate tests of the milk delivered by patrons at receiving stations will be discussed in our Practical Science Department, the editor of which has had a broad experience as a dairy and food chemist, which has fitted him to speak with authority on this subject. City health officers will also be invited to contribute their views.

As an abstract proposition the Michigan Farmer is in complete sympathy with the views expressed in the discussion of the subject presented in another column of this issue. Except for the fact that the health officials of Detroit and other large cities have previously, in pursuing the laudable undertaking of safeguarding the public health, seemed to be directing their energies in the main along lines in reasonable accord with generally accepted scientific theories, we should have long since taken occasion to make merited criticism of instances which have been called to our attention in which arbitrary and seemingly unfair rulings have operated not only against producers, but as well against city consumers of milk, by excluding the product of some very excellent dairies, the owners of which would not submit to the dictation of arrogant, if not incompetent milk inspectors in the employ of the city board of health. But in view of the legitimacy of the object sought and the undoubted difficulty of developing an inspection service of this kind without the making of some mistakes, we have counseled dairymen to comply with the demands and standards set by the health authorities, and through organized effort seek a price for their product which would compensate them for the increased cost of production entailed by such compliance.

While such compliance has been general throughout the territory supplying large cities which Michigan dairymen have helped to supply, the dairy-

men supplying same have, in our opinion, failed to secure adequate compensation, and the very fact that the Detroit Board of Health found it necessary to make a ruling that all milk contributing to the city milk supply must be pasteurized is in itself a practical confession that the methods of inspection in vogue have not been productive in securing a milk supply of trustworthy and unimpeachable quality. In other words the experience of the city boards of health seems to have conclusively proven the very reasonable fact that up-to-date stables and modern utensils do not necessarily insure a high class milk product from apparently healthy and well kept cows. The personal equation is the great factor in the quality of the product. Indeed, from the findings reported in the New York bulletin above mentioned it overshadows every other consideration. The present methods of inspection do not give proper consideration to this factor. Only a laboratory test of the individual patron's product made at the receiving station can do justice to him and insure the best milk supply for city consumers.

It will be made the purpose of this discussion as developed in future issues to first determine the practicability of this apparently desirable plan of milk inspection. If it should prove to be easily possible of application, as seems most probable, the dairy farmers of the state will be urged to demand, both singly and through their organizations, the abandonment of the the present arbitrary methods of choosing sources of supply for city milk, without special regard for the quality of the product, for a system of real milk inspection which will at once do justice to both producer and consumer.

**Conservation vs. Development.** There are now pending before Congress one or more bills relating to the question of the development of water power on the public domain by private capital. It is claimed by the sponsors of this legislation that a provision is contained whereby the government could regain control of the water power rights after a period of fifty years by indemnifying the party or parties to whom the grant for development is made.

On the other hand, conservation leaders maintain that this provision contains a joker, and that really the government would be unable to recover the properties without paying for and taking over all of the business for which electrical current might be supplied from such water power developments. An association has been formed for the alleged purpose of educating the public in the matter of water power developments, to the end that such legislation may be enacted. Prominent conservationists are, on the other hand, exerting themselves to defeat the enactment of the legislation.

The busy public can hardly be expected to go deeply into a proposition of this kind. There is no doubt, however, that public sentiment is very largely in sympathy with the conservation idea. There can scarcely be a doubt that even though the husbanding of natural resources by conservation methods may arrest immediate industrial development to some degree, the public may in the end be benefited by such a course. There has in recent years been a marked tendency toward concentration of water power interests. Should private capital secure a monopoly on water power rights, an actual combination of such interests or even a "gentlemanly agreement" might mean a long fight to escape indirect taxation for the enrichment of such interests.

Michigan is interested in this proposition only indirectly since the greater portion of Michigan's natural resources in this direction are already developed or are in the process of development. Past experience in the exploitation of our natural resources by pri-

vate capital as a general proposition would seem, however, to point to the desirability of conserving those which remain intact for the greatest benefit to the greatest number of our people. How this desirable end may best be accomplished is not an easy question to answer. It is a question which the people's representatives in Congress must answer, however, so far as pending water power legislation is concerned.

**Starting the Fiscal Year.** For various reasons, the beginning of the season's farming campaign is a good time for the beginning of the farmer's fiscal year. Ordinarily, the active campaign on the farm begins about April 1. At that time the stock of grain and forage crops is largely marketed or fed out, so that the task of making an inventory of farm property is considerably simplified. Then, too, the crops grown and the live stock produced on the farm during the coming year will be largely if not wholly marketed before the fiscal year closes, if it is dated from April 1.

Much has been written with regard to the desirability of keeping an account of the farm business which will aid the owner of the farm in determining whether it is operated at a profit or loss, and the factors of his business which have contributed to such profit or loss. Such a system of accounting should be adopted on every farm.

A simple system of accounting which has been adopted for farm demonstration purposes was described in an article relating to a farm survey in Kent county in a recent issue of this paper. The farmers in counties having county agents should at once make application to their county agent for the simple account book which has been adopted for this purpose, for the reason that at the end of the year they can secure aid of the farm demonstrator in making deductions with regard to the profit or loss resulting from the season's operations and secure suggestions which the data compiled from many farm demonstrations indicate in a general way to be essential for the making of a maximum labor income from the operation of the farm.

Those not so situated should at least plan for the keeping of some simple farm account, not only of receipts and expenditures, but with each crop grown and each department of the farm business. The possession of a record of this kind will be most valuable in the analysis of one's own business after the season's experience has been completed. The keeping of such a record involves the investment of but a little time, and the benefits to be derived are out of all proportion to the effort required.

### The Annual Town Meeting.

The "town meeting" held on the first Monday in April is in some essentials the only surviving example of a pure democracy exhibited in governmental affairs. At the general meeting called after the noon recess, the general legislation for the township is taken up. Here appropriations are made for various purposes in which unfortunately a large proportion of the electors generally take little interest. This is partly due to the fact that confidence is generally felt in the township officers who are known to all the voters, and their recommendations are quite generally accepted in the making of needed appropriations.

There is, too, the factor of neglect on the part of the voter who may not find it entirely convenient to be present at this general meeting. Quite frequently many voters do not take the trouble of going to the polls unless especially solicited to come by some candidate for office. Generally, it is this class that are most ready to criticize the action taken at the township meeting in the matter of appropriations or the subsequent action of the township board in administering the affairs of

the municipality. Obviously it is every man's duty to register his vote at the township meeting as at every other election.

### HAPPENINGS OF THE WEEK.

#### Foreign.

**The European War.**—The European conflict continues along the old lines with no important gains by either side announced. The German attack on Verdun was renewed last week with fresh troops, but to no avail. Artillery engagements along much of the western front are common these days, the heaviest being in the vicinity of the Verdun fortress. The Russians launched offensives in Galicia, at the center and on the extreme northern end of their lines in Europe and the Teutonic Allies have been obliged to yield territory in Galicia, while at the other two points the Russians show that they have thoroughly recovered from the campaign of the summer of 1915. In Asia Minor the Czar's forces are making consistent advances against Turks. No important news has been received from the Italian and Balkan fronts this week. In the north sea a British flotilla is reported to have routed a German squadron and an attack was made upon the German airship sheds in Schleswig-Holstein on March 25 in which three British aeroplanes are reported lost.

**The Mexican Expedition.**—General Villa and his followers appear to have eluded the "trap" in which they were reported to be caught last week and are now free to make the mountainous districts of southern Chihuahua and northern Durango. The American forces are 250 miles from El Paso and unless Carranza's soldiers bring the elusive bandit to a stand this distance will be greatly increased during the present week. An engagement between the bandit's forces and Carranza's troops near Mamiquipa last week only temporarily checked the former's retreat.

The Channel steamship *Sussex*, carrying many Americans was sunk last week probably by a German submarine. No warning was given. The matter is being thoroughly investigated by Washington officials and should the findings substantiate the above statements diplomatic relations between the United States and Germany will likely suffer further strain. The British liner *Minneapolis* was also sunk in the Mediterranean Sea. The fate of the crew is not known.

A conference of various high government officials of the Entente Allies is being held in Paris this week to consider military and political situations brought about by the war.

China seized cases of shells and cartridges being conveyed to the Kiang Nan Arsenal in Shanghai. A protest against the seizure was made by two Germans.

The Sir Ernest Shackleton's Antarctic expedition has been marooned at their Ross sea base by the breaking away of their steamer *Aurora*. It is believed that a relief expedition will have to be sent to the rescue of the party.

A call has been issued to organized labor in all countries for a world congress to be assembled at the same time and place that the belligerents meet to make terms for ending the world war.

Members of the American Commission who are endeavoring to arrange for closer trade relations between the United States and South American countries are now at Rio Janeiro, Brazil. A general conference will soon be held at Buenos Aires, Argentina.

#### National.

The war department at Washington is making a special effort to bring the number of men in the army up to the maximum peace footing by adding 24,000 men. A total of 1,333 were added during the first ten days of the campaign.

Loss estimated at half a million dollars resulted from fire in freight sheds at Houston, Texas.

Despite the fact that the production of copper in this country has expanded to new proportions during the present year, it is not keeping pace with the present unprecedented rate of consumption.

A daughter born to Mr. and Mrs. Francis Sayre, Sunday, is the second granddaughter of President Wilson.

Mrs. H. G. Kerns and Mrs. J. Bohnet, prominent Lansing women, were instantly killed when the automobile in which they were riding was struck by a Michigan Central train at Chelsea.

Six persons met death in a club house fire at San Antonio, Texas, early Sunday morning.

Fire destroyed a finishing mill on Russell street, Detroit, Monday morning, entailing a loss estimated at \$50,000.



## Disinfection of Seed Potatoes

**T**HE treatment of seed potatoes with formaldehyde or with corrosive sublimate has been recommended for many years as a preventive of scab and other diseases carried on the tubers.

Such treatment is, on the whole, profitable, but has several limitations which should be clearly recognized to prevent disappointment, according to the specialists of the United States Department of Agriculture. The object of disinfecting seed potatoes is to destroy the germs of scab and other surface parasites which might otherwise be planted with the seed and infect the new crop. Only surface infections are reached by this method. It is only partially effective against deep pits of common scab. Formaldehyde is less effective than corrosive sublimate against the black sclerotia or resting bodies of *Rhizoctonia* or russet scab, and against powdery scab. Neither chemical, as ordinarily used, will destroy silver scurf. Either one will kill surface infections of black-leg, but neither will reach the internal infections common in tubers from the black-leg hills. Neither *fusarium* will nor late blight infection in potato tubers can be reached by any seed treatment, nor can any of the non-parasitic diseases of potatoes, such as mosaic, leaf roll and curly dwarf, be prevented. See Farmers' Bulletin 544 for descriptions of these troubles.

Clearly, therefore, the most important precaution against these diseases is to select clean, disease-free seed potatoes from healthy, vigorous plants, as determined by field inspection during the growing season and at harvest. Seed treatment should then be applied as an additional precaution. It will not be effective, however, if the soil where the potatoes are to be planted is already full of disease.

### Soil Conditions and Potato Diseases.

Soil conditions have an important relation to potato tuber diseases, and many of these are widely spread throughout the country, perhaps native to some soils. Common scab is favored by a neutral or slightly alkaline soil, and seldom gives trouble in acid soils. It is, therefore, increased by liming and by fresh stable manure, wood ashes, and alkaline fertilizers, such as nitrate of soda and ground bone, while acid phosphate and sulphate of ammonia tend to diminish scab.

*Rhizoctonia* occurs to some extent in nearly all soils, but appears to attack potatoes most when the conditions are unfavorable to the best development of the potato plant. Bring the land to an ideal state of tilth to minimize loss from *Rhizoctonia*.

Powdery scab is worst on cold, wet or poorly drained soils. Black-leg, on the other hand, is carried by infected seed. No potatoes showing a deep brown discoloration at the stem end should be planted.

Sulphur tends to prevent common scab. It is not a substitute for corrosive sublimate or formaldehyde, but is a good drier for cut seed. Applied to scab-infected soils at the rate of 500 pounds per acre it reduces the scab, but such heavy applications can not be generally recommended as profitable. Preliminary experimental trials are advised.

### How to Disinfect Seed.

The formaldehyde treatment consists in soaking the potatoes, before cutting, for two hours in a solution made by adding one pint of formaldehyde to 30 gallons of water. The solution can be used repeatedly. The gas treatment is no longer recommended.

Corrosive sublimate is used at the rate of 1-1000 for one and a half to two hours. Dissolve two ounces of the salt in hot water and dilute it to 15 gallons. This is a deadly poison. Use with great care. It must also be kept in wood, porcelain or glass vessels as it attacks metal. It is more effective

than formaldehyde, more particularly against *Rhizoctonia* and powdery scab. Do not use the same solution more than three times as the strength diminishes with each lot of potatoes soaked.

To treat large quantities, set several barrels on a slightly elevated platform. Fit a plug in a hole in the bottom of each barrel, fill with potatoes, cover with solution, let stand two hours, draw off solution and pour into another barrel. Increase the number of barrels in proportion to the quantity to be treated. Another method is to use a large wooden vat or trough, into which the potatoes in sacks are lowered by a rope and pulley, and later hauled out, drained and dried on slatted racks.

Seed potatoes may be treated several weeks before planting, provided they are not reinfected by storing in old containers or storage bins.

Sprouted potatoes are injured by treatment, but will throw out new sprouts. In general, however, potatoes will not be injured by following the above directions. Many growers believe germination is improved by treatment.

### THE UNPAID TENANTS OF OUR FARMS.

(Continued from first page).

they are thought to be from the fact that their supply is locked up in an unavailable form. In such instances hu-

will start of their own accord. It is quite often advisable to take exception to the best of rules. One exception to the above rule is found in a consideration of alfalfa. Even here the rule will hold true. However, quicker and more certain results are always obtained (other conditions being favorable) when inoculation is practiced. Although we do not make a regular practice of inoculating the soil for other leguminous crops, yet increase in yield is most often accomplished from such a practice quite profitably. When we do not inoculate we depend upon the presence of the desired organisms in the soil. It is a proven fact that legumes do not thrive without the co-operation of soil organisms. Try as you may and you will not find a healthy bean plant without nodules on its roots.

Many of us, in cleaning the stables, pitch the compost out into a pile. Sometimes this pile is where it catches the rain water from the eaves. Heat is generated in the pile. The moisture and food content of the pile are ideal for bacterial growth. Micro-organisms abound in the feces. These organisms start growth in the compost and break down or digest the organic matter present. In this manner it is rendered soluble. The rain water from the eaves takes it up and drains it away. It is lost. A remedy for this can be had at moderate cost. A compost pit built of concrete will keep the liquid manure from leaching away. Another simple remedy is to haul the compost directly to the fields and spread it.

Anything further than a general con-

### CROP AND FERTILIZER QUESTIONS.

#### Permanent Pasture.

I have 15 acres of new ground, a sandy loam, seeded to rye last fall. I would like to know what kind of seeds to sow for a permanent pasture, also the quantity and time of sowing. I thought some of the seeds should have been sown last fall, but neglected doing so.

Barry Co.

W. D. C.

I would not advise sowing the seeds for a permanent pasture on this field of rye this spring. Many of the seeds would not be covered and would not grow. It would be better to harvest the rye when ripe, plow the ground at once and harrow it thoroughly until August 15 or thereabouts and then sow the permanent pasture mixture. The following makes a splendid mixture for permanent pasture:

Timothy, mammoth clover, white clover, sweet clover, orchard grass, meadow oat grass, meadow fescue, sheep fescue, Canada bluegrass, rye grass, alfalfa, red clover, and *Bromus inermis*.

You can buy this combination already mixed or buy each separately and mix yourself. If you mix equal parts by measure it will be all right.

The first year it should not be heavily pastured. Let it become well established. It will pay to clip it and leave the clippings on the land. If it is heavy enough it could be saved for hay.

#### Speltz or Barley, Which?

What is best to raise here, speltz or barley? When is speltz sown—in the spring or fall? If in spring, how early, also amount of seed per acre, and is it drilled or broadcast? How early is barley sown, before or after oats, amount of seed per acre, and is it best drilled or broadcast?

Livingston Co.

N. T. H.

If your land is extra fertile I would prefer to grow barley, but if it lacks in fertility or is quite sandy then probably speltz would do fully as well or better.

Speltz is spring grain, but there is a winter variety. Very little of this, however, is grown here. Sow one and a half to two bushels. It is always better to drill in grain, otherwise much of the seed is not properly covered and is lost. It is difficult, however, to drill speltz on account of the heavy hull. The drill must be set for more than the usual amount of seed.

Both oats and barley should be sown early in spring. But I would sow the oats first. Oats should be sown just as soon as the ground can be properly worked. Don't put off sowing barley too long. Sow as soon after oats as possible.

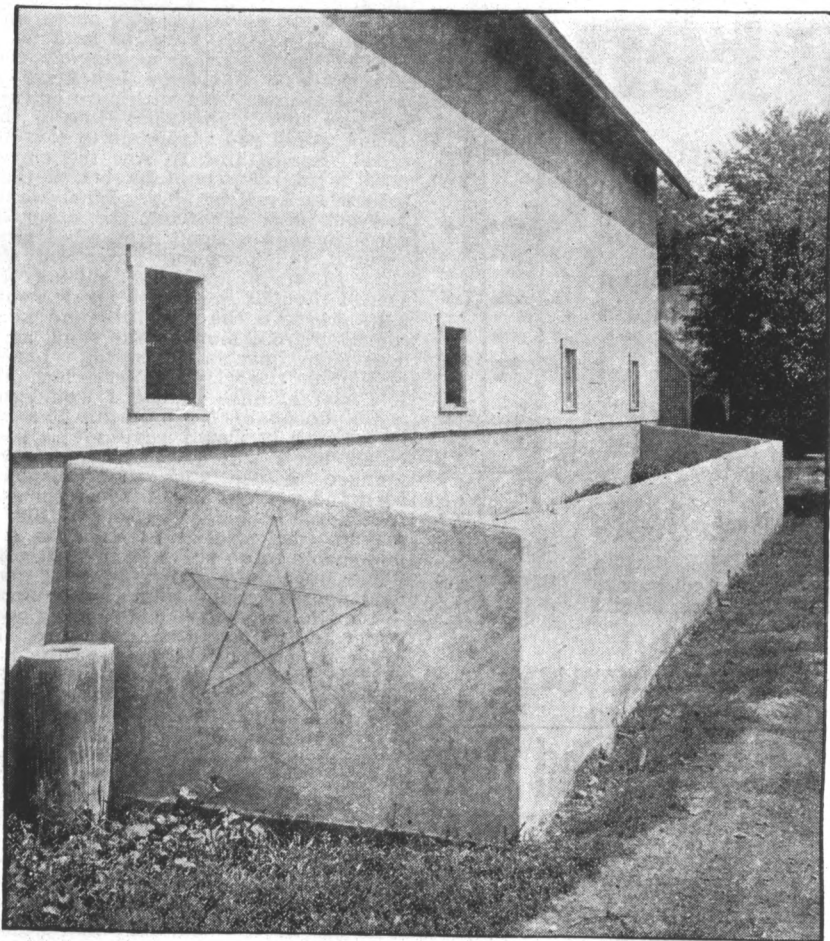
#### Two Forage Crops in One Season.

Last spring in the Michigan Farmer, Mr. Lillie told about raising peas for the canning factory and using the vines for ensilage. Also about disking the ground afterwards and planting to corn. I am trying to get started in the dairy business and have to sow corn to carry the cows through the summer. Now, I would like to ask his opinion on a few points. Is it a paying proposition to sow peas, or peas and oats as early as possible in the spring and cut with the mowing machine and put into the silo for summer use, and then disk up the ground and plant to 90-day field corn? Or would it be better to plant peas and oats on ground to be seeded to alfalfa, and then disk up and sow to alfalfa after cutting the oats and peas? What kind and how much peas should I sow to the acre? Also, about how many tons to the acre ought they to go on good clay soil? We have covered this ground this winter with the litter from the stables. Also, what can I do to a field of alfalfa this spring to get the June grass out of it?

Monroe Co.

F. L.

I think it entirely practical to grow a crop of oats and field peas for hay and then disc up the ground thoroughly and grow a crop of early maturing corn for silage. So, too, can the land be plowed immediately after cutting early clover for hay and planted to corn for silage. The latter case is the most risky, because the ground must be plowed and at this time of the year by plowing we might lose so much moisture that germination of the corn would be endangered, but with peas



A Simple, Convenient and Inexpensive Concrete Manure Pit.

mus is also invariably lacking. The difficulty is remedied by building up the organic content of the soil.

Nitrogen, in fertilizing materials, is expensive. The air is all around us. It is about three-fourths nitrogen. It would not be asking too much of our tenants were we to call upon them to capture some of this nitrogen for us. To this end practice some crop rotation which allows for a legume, preferably clover, once in every three or four years. If all conditions can be made favorable it is well to consider a longer rotation including alfalfa as the legume.

Time and again the question arises, "If my soil is depleted, how am I to get soil organisms started on my farm?" An answer might be of this nature: Make the required conditions right by adding humus and if necessary lime to the soil and the organisms

sideration of this subject at this time is quite out of the question. The study of soil organisms is still in its infancy. New factors of great importance are brought to light through research all the time. It has been the aim of the writer to leave with you an impression of the stupendous work of these minute soil organisms. In the past, either their existence has been entirely overlooked, or their importance has been underestimated and they have been neglected. We have been the ones to suffer loss from this negligence. They, our unpaid tenants, are willing to come back and work for us even while we sleep, if we use them right. It pays to feed the soil bacteria.

In this connection proper consideration should be given to the possible need of lime to correct soil acidity. A sweet, or at least a neutral soil, is necessary for a maximum development of beneficial soil bacteria.—Editors.



Look for this  
portrait on the  
sleeve!



Henry Sonneborn

Founder of this business

It means  
"most for your  
money" always!

When you buy that new suit of clothes, remember this: No matter how the war has changed the market and raised prices, Styleplus Clothes are always the best value in the world, always the same easy-to-pay price \$17! We are so big and make clothes so scientifically (putting all our forces back of one suit) that we can afford to give the most for the money at all times and to keep our price always down to \$17. Styleplus are the greatest value in the world for the money!

Style plus through-and-through quality (all wool fabrics)

Style plus perfect fit (for every man of every build)

Style plus economy (the easy price for everybody)

Style plus guaranteed wear (a written guarantee with every Styleplus)

You know the price before you go into the store—\$17 always, everywhere. Watch your local newspapers for advertisements of the nearest Styleplus Store. Look for Styleplus in the Store Window. If you don't know this Store write us and we will tell you where it is.

Write us (Dept. H) for free copy of "The Styleplus Book."

HENRY SONNEBORN & CO., Inc. Founded 1849 Baltimore, Md.

**Styleplus \$17**  
Clothes

The same price the nation over.

# Anthony Fence

Under stress of action each wire within a considerable radius is brought into play, affording, to an extraordinary degree, the resistance of a flexible wall of steel—due to the perfectly balanced woven fabric, in which each wire is drawn under equal tension with machinery of special design. Thoroughly galvanized.

**AWARDED**  
PANAMA PACIFIC  
GRAND PRIZE  
ST. LOUIS EXPOSITION

**American Steel Fence Posts**  
Cheaper than wood and more durable. Last a lifetime. Sent Free—write for booklet on how to set posts and erect fence. Every farmer should have it.

DEALERS EVERYWHERE

**AMERICAN STEEL & WIRE COMPANY**

CHICAGO NEW YORK PITTSBURGH CLEVELAND DENVER

**WORTHY OATS** Pedigreed strain from the Mich. Agr. College. Raised on the Jennings Farms. 2nd prize winner in the State Gold Medal Oat contest. Yield 88 bu. per acre. These oats grown from formalin treated seed. \$1.00 per bu. Order promptly from H. A. Fick, care Mich. Agr. College, East Lansing, Mich.

Write for Samples and Prices of

**White Bonanza Seed Oats**  
One of the best varieties grown in Michigan.  
Young-Randolph Seed Co. Owosso, Michigan

**OAT SEED**

The Great Dane, Garton's, Corn Belt No. 5, and Golden Fleece. Yields over 100 bu. per acre. Write for cheap prices on best of seed. W. J. Merriam, Almont, Mich.

**Clean, Guaranteed pure, Wisconsin Pedigreed No. 1 Oats.** Write for reduced price. Fred Volght, Lomira, Wis.

**Seed Oats,** Garton No. 5, "The Corn Belt Oat," also Worthy's. Not damaged by wet. Free from smut. Sample and prices on request. E. S. CHRISTIANSEN, CORAL, MICH. Member Michigan Experiment Association.

**Walker Sons, Proprietors**

of large seed growing farms in the County of Essex, Ontario, announce that they have a quantity of high-class seed corn for sale. The practical failure of the seed corn crop last season necessitates that great care should be taken in the quality of seed selected this year. We have several varieties for sale, but would recommend especially for Michigan that of Bailey, it having been tried by the Michigan Agricultural College and found satisfactory. OUR CORN is shipped on the cob in boxes 70 pounds net, price \$3 per bushel, F. O. B. Walkerville, Ontario. Address

WALKER SONS, Walkerville, Ontario

**SEED CORN**

Mich. Yellow Dent, 1914 crop. Order quick. Supply limited. \$3.25 bu. shelled. Early Snow Seed Potatoes. Pleasant Point Farm, Hillsdale, Mich.

**Seed Corn:** Limited supply of Mich. Yellow Dent. Home grown, fine dried and tested. Price \$3.50 per bu. Shelled. Sample on request. F. A. Bywater, Memphis, Mich.

**Early Yellow Dent** Seed Corn. 1914 crop. Price \$3.25 per bushel, sacks free. A. E. Bacon & Son, Sheridan, Mich.

**Pedigree Seed Oats**  
\$1.00 PER BUSHEL

Two varieties, Worthy and Alexander. On land of ordinary fertility these oats have been found to average 75 bushels per acre. Straw being very strong, they are less apt to lodge than other varieties. They are money makers for any farmer. Price includes package.

**The Holmes Grain Co.**  
MARLETTE, MICH.

**Early Washington SEED OATS**

Early maturers and big yielders, 50 cents per 4 bu. including sacks. Big Fours, 75 cents per bu.

**The E. W. Armstrong Co.,**  
Monroeville, - - - Ohio.

**Pedigreed Oats:**

Worthy, Alexander and other varieties, bred by the Michigan Agricultural College, best of hundreds of varieties tested. Grown in Michigan and adapted to Michigan conditions. Reported upon by farmers as follows: "The oats produced 85 bushels per acre, best yield in township." "Your pedigreed oats have a very stiff straw and are good yielders." "Were far better than my own variety." "Best crop we have had in ten years." "Best ever grown." Etc. Write to Secretary Mich. Experiment Association, East Lansing, Mich.

**Oats SENSATION**—123 bus. per acre. Also Leaming and Reid's Yellow Dent Seed Corn. Samples and catalog free. Theo. Burt & Sons, Melrose, Ohio.

and oats the land can be prepared by disking with little or no loss of moisture. One must be prepared to do this work at once as the ground dries out rapidly at this season of the year.

Alfalfa can also be sown after peas and oats cut for hay. In each case the pea and oat crop should be cut quite early.

Use the common Canada field pea. Mix them equal parts by measure and sow two and a half to three bushels per acre. On good land with a favorable season two to four tons of hay can be produced.

**Cleaning Alfalfa of June Grass.**

The best and only way to take the June grass out of this alfalfa is to cultivate it with an alfalfa harrow. This is simply a spring-tooth harrow or cultivator with rather pointed teeth. This cultivating should be done as early in the spring as you can get onto the land. It will probably be necessary to harrow both ways to get all the June grass.

If the field had been fertilized liberally with phosphorous, (super-phosphate or acid phosphate), each year the alfalfa would probably have been able to fight its own battles. It would be so vigorous that the June grass could not get a good start.

**Getting a Stand of Clover.**

I have a 40-acre field of sandy land and would like to get this land seeded. This land was plowed last fall and I sowed 10 acres to wheat. Before sowing the wheat I sowed 600 pounds of hydrated lime to the acre and dragged it in and then sowed 500 pounds of fertilizer to the acre and dragged it in. The wheat was looking good when the snow came and covered the ground. What kind of clover seed had I better sow on this 10 acres, and do you think this piece of land is in shape to get a catch of clover? Do you think it would be beneficial to treat the clover seed with pure culture before I sow it and what time of the spring would you advise me to sow the seed? Some think to sow the clover seed in March would be better than to sow in April or May. What would be your idea of fitting the other 30 acres to seed without a crop? I have thought of spreading straw on the next 10 acres and then sowing the seed. I thought the rotten straw would help preserve the moisture and keep the wind from blowing the sand, as it does sometimes in the spring. I sowed lime on the whole 40 acres last fall. If I had manure to use I would get some phosphate to use on this 10 acres if I knew it would save me a seed catch, but I will not have very much manure to use with the phosphate rock and they advocate to use the two together. I would like to get this 40 acres seeded to alfalfa some time if it is possible to do so. I have seen good fields of alfalfa growing on a good deal poorer ground than this 40 acres—but alfalfa is very hard to get a good stand here. I could summer-fallow the other 20 acres till August or the last of July, and try seeding it to alfalfa if I knew just how to fit it up to get the alfalfa to have an ideal seed bed, so it would not be a failure. I do not want to go to a big expense unless I am pretty certain of getting good results. I would be glad of any good advice. I would try some hardwood ashes if I could get them.

Kent Co.

J. T.

This land ought to be in good shape to get a stand of clover. I believe you will get it. On clay soil that honeycombs by freezing, the best time to sow clover is early in the spring before freezing weather is over. Then the action of the frost will bury the seed. But on light sandy soil many think it is better to wait until the land is dry enough to harrow. Then sow the clover and harrow with a slant-tooth drag. The harrow will do the wheat little or no harm. Common June clover is best. Sow about eight quarts of seed per acre. (Many use but four quarts per acre, which is sufficient under favorable conditions).

If this land has not grown clover for years it would certainly be a good plan to inoculate the seed with pure culture.

Prepare a good fine seed bed on the other 30 acres and sow to clover alone, using 300 to 400 pounds of fertilizer. Better use one ton of ground limestone per acre before sowing the clover, and harrow it into the soil. It will

will be an excellent plan to top-dress with the straw after clover is sown. Spread straw with a manure spreader if possible, so as to get it even and fine. Acid phosphate will give good results without manure. It is already water soluble.

I would not be afraid to sow this 30 acres to alfalfa this spring. Do just as I have said for clover. If you use 500 pounds of acid phosphate and one ton of ground lime, and then top-dress with straw one could almost guarantee a stand. If you sow to alfalfa be sure and do a good job of inoculating the seed.

Hardwood ashes would be excellent to use, as they would furnish lime and also potash. But wood ashes are scarce in this county now. I doubt if they could be obtained in commercial quantities.

**A Catch-Crop Pasture.**

I have bought a farm that is quite sandy, with some gravel, and as there is no pasture on it the question is, what can I sow that will make pasture this season? Can I sow something that will make pasture for both cows and hogs? Have been thinking of sowing oats, peas and rape and seeding with orchard grass and timothy. Or if there is something better to sow please advise me and how much of each to sow per acre? Is there a spring rye and does it yield very well? Osceola Co. J. H.

A catch-crop pasture can never be depended upon like a well established June grass, clover or a mixed grass pasture. However, it is better than no pasture.

I know of nothing better to sow for this pasture than what J. H. suggests, oats, peas, rape and clover, on good rich land this would yield abundantly but on sandy land—well, it all depends on the sand and the season.

Manure the field well. If you have no stable manure use fertilizers. Acid phosphate and tankage. There is little potash to be had this year.

Mix peas and oats equal parts by weight, and sow three bushels per acre, also five pounds of dwarf Essex rape and six pounds of clover. Sow oats and peas first, fairly deep. Then sow rape and clover and roll. You can sow rape and clover mixture with grass seed attachment of drill at same time you sow peas and oats by scattering seed ahead of drill teeth.

**A Nurse Crop for Permanent Pasture.**

Would you please give me some information regarding a piece of new ground that I cleared last summer? It is heavy clay ground. I wish to seed it this spring and keep it for pasture. What kind of clover would you sow, and what is best for a nurse crop on this kind of land? I think it is too rich for oats. How would speltz or barley do on such ground and which is the best feed for hogs and cattle? Osceola Co. C. B.

This is not the best kind of land for speltz. Speltz does better on a drier sandier soil. If oats would lodge on this soil barley certainly would also. But if you get a variety of oats with a good stiff straw and sow them rather thin, say one and a half bushels per acre, I don't think they will be apt to lodge badly. Of course, if a bad storm comes at the right time any crop will be blown down. Barley requires a rich soil and if sown thin, one and a half bushels, it will be safe to sow. I like to hear one talk about land too rich to grow oats and barley. We don't usually have it rich enough. Barley will make the best hog feed.

Use the following mixture: Timothy, white clover, alsike, red clover, sweet clover, redtop, tall fescue, and sheep fescue. You can buy mixtures of this sort ready mixed or buy the seeds separately and mix equal parts by measure. Sow the oats or barley, then sow the grass mixture and harrow lightly with slant-tooth harrow and then roll, with corrugated roller.

COLON C. LILLIE.

**Too Many Orders.**

Joseph Newman, Dorris, Mich., who has been advertising day-old chicks, writes: "Please discontinue my ad. I am getting more orders than I can fill."



## Oat Smut

One day last summer as I was going along a road about a mile from a thriving Indiana town I came to a good looking field of oats. I noticed a few "blasted" heads from the road, and so I dismounted from my wheel and walked into the field a little way. I then found that the diseased heads were considerably more abundant than I had at first thought. I commenced picking one of them, and by actual count, I thinned 127 smutted heads without moving other than to turn around in my tracks. In view of the publicity which has recently been given the formalin treatment as a preventive of smut the severity of the infection in this field was a surprise to me. I had expected that with most progressive farmers the treatment had become as much a part of the standard procedure in preparing oats for seed as is fanning them, unless they were known to be practically free of smut. Certainly there are some farmers, however, probably not of the progressive type, who do not take the precaution just mentioned. A man may lose part of his crop yield through a number of causes and the loss be no reflection on himself as a farmer, but a serious loss from oat smut is a reflection on the farmer because there is a cheap, easily applied and effective way to prevent such losses.

One cause for failure to take steps against the disease is probably a lack of realization of the total toll on the crop which it takes. It is sometimes said that a large number of "blasted" heads indicates a large crop; and so it does in a way. When the season and soil are such that the crop grows vigorously the conditions are also best for the development of smut and for the growth of the smutted plants till the blackened heads can be seen among the normal heads. In years when growth conditions are poor the infected plants may never head out, or if they do the stalks are apt to be so short that they are pretty thoroughly hidden by the normal plants. Even in years of plentiful rainfall and consequent rapid growth many more smutted heads are hidden well down below the normal heads than are found up on a level with them. If one would measure off small spaces in his field, count all the stalks and determine the proportion of heads destroyed by smut he would in most cases have a much more serious notion of the real damage done.

### The Remedy.

The remedy is simple, effective, and easy to apply. It depends on the fact that the disease is caused by spores which cling to the seed and infect the seedling. It consists in applying to the seeds a chemical which will kill the spores but will not injure the seed for planting purposes. This chemical is formaldehyde. Put a pint of commercial formaldehyde (40 per cent solution) in 50 gallons of water. Pile the oats on the floor and sprinkle the formaldehyde solution over them until they are damp but not wet, meanwhile shoveling them over until the solution is evenly distributed over them. Rake them into a compact pile and cover well with gunny sacks or other cloth to prevent evaporation and leave for from two to ten hours. After that they may be planted at once or kept as long as desired. In either case they should be spread out evenly and dried rapidly. It may be necessary to stir several times in order to insure quick and thorough drying. Care should be taken after treatment not to put the treated grain in sacks containing smut spores or to drill it from drills similarly contaminated or these things will undo much of the work. If necessary bags and drills should be treated to a thorough application of the solution in order to free them from the spores. For the treatment of large quantities of grain, machines which do satisfactory work are now on the market.

Indiana.

C. A. LUDWIG.

# John Deere Implements

## John Deere Spreader The Spreader with the Beater on the Axle

ONLY hip high to the top, but has big drive wheels. Wheels out of the way when loading.

Beater drive works on the principle of a horse power. No clutches, no chains, no trouble.

Mounting the beater on the axle (a patented feature) does away with half the types of castings.

Three exclusive features of the John Deere Spreader: [1] Beater on the axle—simply revolutionary in spreader building. Nothing else like it. Doubles the value of the spreader by all practical tests. Makes the John Deere Spreader possible. [1]

[2] Revolving Rake—entirely new and original. Load moving back to beater revolves the rake. The teeth down in the load hold the manure while the beater pulverizes it. Draft actually less. Even spread—no bunching. [2]

[3] Ball Bearing Eccentric—apron driven without friction. This ball bearing apron drive requires no attention, not even oiling, but it performs wonders in the working of the Spreader. [3]

Write for John Deere Spreader booklet. Tells all about farm manures and fertilizers, how to store manure, its value, and how to spread it most economically. Also contains illustration in colors.



## John Deere Two-Way Plow

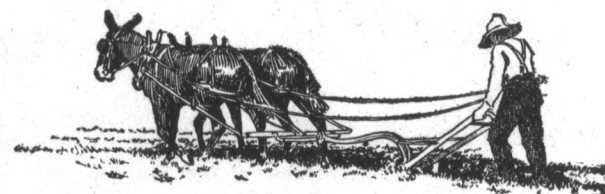
Steel Frame—Patent Auto Foot Frame—Shift

HIGHLY practical and convenient for working soil all in one direction on hillsides or elsewhere. Also adapted for plowing irregular shaped pieces of land or any other kind of plowing.

Auto foot frame shift works with great exactness. Slight foot pressure swings frame and moves working plow the degree required. Patented.

Automatic horse lift—no work for operator. Each plow independent of other—each has own depth regulating lever and lifting device.

Write for booklet.



## John Deere Syracuse Plows

The Plows with Perfect Fitting Parts

SYRACUSE shares fit perfectly—extra shares go on easily. A smooth joint is formed between share and moldboard and share draws up snugly to its place.

Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point. The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

Two bolts in the share instead of one and there is a rib on back of share that strengthens share and standard. Lug holds moldboard and share closely together.

In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily in the furrow.

Write for free literature on the 31 series, combination plows, for use where land is somewhat rolling or where it is desired to turn furrows smoothly up or down on sloping land.

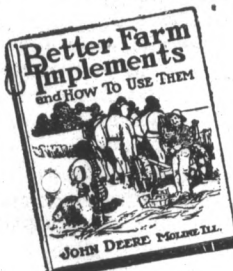
Also the 342 series, combination plows, for use in sandy or gravelly soil, turf or stubble; the 26 series hillside plows, light weight, clean turning plows that do excellent work in hillside or level land.

## John Deere Dealers Everywhere

Better Farm Implements and How to Use Them

BOOK FREE—168 page reference book—tells all about a complete line of farm implements and how to adjust and use many of them. A practical encyclopedia of farm implements. Worth dollars. Describes and illustrates: Plows for Light Tractors; Steel and Chilled Walking and Riding Plows; Disc Plows; Cultivators; Spring Tooth and Spike Tooth Harrows; Lister Plows and Cultivators; Disc Harrows; Alfalfa and Beet Tools; Farm and Mountain Wagons; Teaming Gears; Manure Spreaders; Inside Cup and Portable Grain Elevators; Corn Shellers; Hay Loaders, Stackers, Sweep Rakes, Mowers, Self-Dump Sulky and Side Delivery Rakes; Hay Presses; Kaffir Headers; Grain Drills and Seeders; Grain Binders; Corn Binders; Gasoline Engines. This book sent free to every one who states what special implements he is interested in and asks for Package No. X-5.

John Deere, Moline, Illinois



## Always a Clear Track

In spring, summer fall or winter—for protection against ice, snow or rain, nesting birds or trash—you can always depend on the

### Loudon Bird-Proof Barn Door Hanger

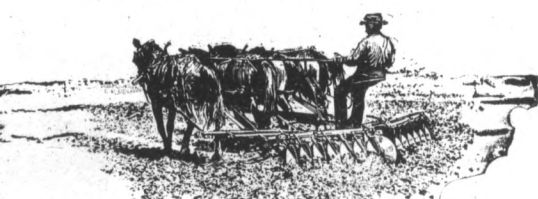
If you expect to build, or your door hangers are out of repair, you need the bird-proof, a completely enclosed track that will solve your door hanger problems for years to come.

The trolleys are thoroughly protected. They can't rust, clog, or jump the track. Hardened steel roller bearings make them roll smoothly and easily. A child can open or close the heaviest door.

Booklet No. 5 tells the whole story. It's free; write for it today.

**The Loudon Machinery Company (Est. 1867)**  
1904 Court Street Fairfield, Iowa

When writing to advertisers please mention the Michigan Farmer.



## John Deere Disc Harrow

The Flexible Spring Pressure Disc

MODEL B—the only disc that cuts at even depth its entire width. It has a patented spring pressure lever. With this lever, pressure can be regulated at inner ends of gangs to cut out dead furrows or disc ridges without burying the harrow.

The Model "B" does not crowd toward the bottom on hillsides or in overlapping. The gangs are independent of each other and can be given the proper angle to work right under such conditions.

Write for free booklet, "Bigger Crops from Better Seed Beds."



## John Deere Plows for Light Tractors

High and Level Lift

PRACTICAL—the right size for the average farm. Work with any standard tractor. Controlled by the man on the tractor.

Pull the rope and all bottoms raise high and level. Another pull lets them down. Plows do not clog or gather trash on the turn.

Extra beam and bottom, readily attached, increases regular two bottom plow to three, or regular three bottom to four, as desired.

Equipped with Quick Detachable Shares—save 80% time changing shares. Write for free booklet.

## SUDAN GRASS 9 1/2c

Northern-grown—Extra Fine Quality—Very Pure—Free Johnson Grass—High Germination. Do not fail to plant this wonderful forage crop this season. Heavy hay producer; equal to cane—quality far superior. Excellent pasture, not affected by drought. Cheap to plant and grows abundantly either wet or dry—on all soils—no failure. Write today for circular and 100-page catalog and Free Sample. It will pay you big.

A. A. BERRY SEED CO. Box 1231 CLARINDA, IOWA

## SAVE MONEY UNLOADING

Save the expense of men and teams in unloading hay, grain, pulling timbers, elevating ice, drilling, digging, etc., with an IRELAND HOIST. 100 uses on each farm. Guaranteed every way. Free circulars. Ireland Machine & Foundry Co., 33 State St., Norwich, N.Y. Also mfgs. of drag and wood saws, mills, etc.

## WHITE SWEET CLOVER

Specialty treated for quick germination. ALSO FANCY MEDIUM MAMMOTH ALSIKE AND ALFALFA CLOVERS, TIMOTHY SEED, WINTER VETCH, etc. Ask for samples and special price list.

YOUNG-RANDOLPH SEED CO., OWOSSO, MICH.

## TIMOTHY AND ALSYKE \$4.50

Per bu. Bags extra at 20c each. Send us your order. Young-Randolph Seed Co. Owosso, Michigan



FOR  $\frac{3}{4}$  OF A  
NEARLY CENTURY  
**DOMINANT PROGRESS**  
Has made the Red River Special the  
Threshing Machine of the Age



Since 1848 the Nichols & Shepard Company has been interested in one line of endeavor only—the making of machinery for threshing grain. They started their career with a revolutionary improvement in the threshing process that put them in the lead—continued inventiveness of the same bold character has kept them at the front.

**WHAT HAS BEEN ACCOMPLISHED?**

By Beating Out the Grain, a principle that has never been abandoned since originated by this company, more separation, better separation, faster separation, cheaper separation, are all combined in this one machine.

Owning or using a Red River Special rig, you can do more than you can do with any other known make of threshing machine, and it is so written as a part of your purchasing contract.

What do you expect to get when you select another kind?

You ought to read your own neighbor's opinion of a good job of threshing. You'll find it in the Home Edition of the Red River Special paper. Write for a copy and post up. The Big Catalog will be sent also if you ask for it.

**NICHOLS & SHEPARD CO.**

(In Continuous Business Since 1848)

**BUILDERS EXCLUSIVELY OF  
THRESHING MACHINERY**

Red River Special Threshers, Feeders, Wind Stackers  
Steam and Oil-Gas Traction Engines

(3) BATTLE CREEK, - MICHIGAN

**THE KRAUS In-crease Your Corn Yield**

Cultivator is simple, economical and thorough. Its even cultivation means big crops. Cost only 1 1/2 to 3c per acre cultivated, as compared to 3c government figures, on the average cultivator. Our pivot axle eliminates tire work.

The slightest pressure of foot levers simultaneously moves both shovels and wheels to right or left. You can instantly adjust width between shovels while machine is in motion. Does perfect work on hillsides, uneven land and crooked rows. A boy can operate. Practically no repairs.

Write for Literature describing Cultivator and Akron Fertilizer Distributor which applies fertilizer while cultivating. This device can be used only on the Akron Cultivator. Write today.

The Akron Cultivator Co.  
Dept. 64  
Akron, Ohio

**HURST SPRAYERS Mean Bigger Crops**

In these days when insect and fungus pests are ever on the increase spraying is absolutely necessary. The United States Government as well as many of the State Experiment Stations use Hurst Sprayers because the quality and construction is of the very best.

**32 Different Styles**

Man, Horse and Gasoline Engine Power. Our big Free Book "Why, How and When to Spray," shows 74 illustrations of insect and fungus pests and gives the remedy for each, also shows our complete line of sprayers. Write for it today.

The H. L. Hurst Manufacturing Co., 241 North St., Canton, Ohio

**Siberian Seed Oats**

best yielders for ten years Ohio Experiment Station. 80c sacks included.

The E. W. Armstrong Co.,  
Monroeville, - - Ohio

**The "Berlin Quart"**

That secures highest prices for your fruit. Write for 1916 catalog showing our complete line and secure your baskets and crates at WINTER DISCOUNTS.

The Berlin Fruit Box Co.  
Berlin Heights, Ohio.

**First-Class 2 Yr. Trees, 4 to 5 ft. YOUR CHOICE**  
10 Apples \$1.00, 12 Pears \$1.50, 12 Quinces \$2.00, 12 Plums \$1.50, 12 Cherries \$1.75, 12 Peaches (1 yr.) \$2.00. John W. Finn's Wholesale Nurseries, Danville, N. Y. Catalog free.

## Growing Small Fruits

THERE is no line of farming which will bring returns as early in the season as the growing of small fruits. It readily adapts itself as an adjunct to any kind of farming and the returns from it are usually greatly welcomed because they come at a time when nothing is coming in and everything is going out. There is a further advantage in growing small fruits in that their season is short, the activity of harvesting is soon over with and all the work necessary the rest of the season is in preparing the plants for another season's crop.

The strawberry is to the small fruits what the apple is to the tree fruits; it is decidedly the most popular of small fruits. Furthermore it does well on a variety of soils and is quite easily taken care of.

**Selecting Varieties of Strawberries.**

In the selection of varieties of strawberries one must be guided to a great extent, by the kind of soil on which the strawberries are to be grown. There are certain types which do well on light soils while others will be com-

trimmed back to about three inches in length and all of the leaves trimmed off except about two of the newest ones. The best thing to make the hole with is a common garden spade. This can easily be done by thrusting the spade in the ground and enlarging the hole by moving the spade from side to side. While setting, the plants should be kept in a pail of water, taking a few of them at a time from where they are heeled in, or thoroughly moisten them and place them in a shallow basket. Care should be taken to firm the earth thoroughly around the roots but to finish the job a little loose earth should be put around the plant to stop the evaporation of moisture through the firmly packed earth.

**The Seasonal Care of Strawberries.**

Cultivation should be started as soon as possible and be kept up at frequent intervals during the growing season. When the ground becomes frozen the plants should be well mulched with any kind of mulching material, straw being preferred. The mulching should not be put on so thick that it will



The Strawberry Brings the First Income of the Season.

parative failures on such soils. For instance, all of the fancy varieties, such as the Marshall, Wm. Belt, Glen Mary, etc., need quite rich loamy soils to develop them properly. They are varieties which do not make many plants and therefore the rich soils will strengthen their weakness in that respect. On account of the comparatively few plants they make they are especially adapted to hill culture, the system used for growing fancy berries.

For the lighter soils the poorer quality of berries, such as Uncle Jim, Bederwood & Clyde, are good, for under such conditions they make thrifty plants and are productive. But for general conditions there is nothing which will do better than the Senator Dunlap, which is the Baldwin of strawberries. It does better under a larger range of soil conditions than any other variety. The Warfield, which is sometimes called the imperfect Dunlap because of having a pistillate blossom, is a close running mate of the Dunlap.

With respect to season, the Luther is a good early kind. Crescent and Bederwood are also good. Senator Dunlap, of course, is the best main crop berry, and for the late season Glen Mary, Sample Aroma, Wm. Belt are good. Gandy is a good variety to close the season with but it does not do well on light soils.

**Setting the Patch.**

The best way to set strawberries is in the narrow matted row unless the berries are to be grown extra fancy, then the hill or hedge row systems are the best. The plants should be set 18-24 inches apart in rows three and a half feet apart. Plants which make plenty of runners should be set farther apart in the row than others. During the early part of the season all blossoms and runners should be cut off so that all of the vitality of the plants is used in establishing themselves in their new location. After midsummer the runners should be left and allowed to develop until the row is about a foot wide. If the rows are left to grow wider they should be set farther apart. Before setting, the roots should be

three feet high they should be clipped back so as to make the canes stocky and to encourage the growth of laterals. Immediately after harvesting the crop the old canes and all but five of the strongest new ones should be cut out. In spring the laterals should be clipped back to about six inches in length.

Anthraxnose is the most serious trouble the raspberry and blackberry grower has to contend with. It shows itself in the whitish blotches on the canes, especially near the ground. It is a fungus disease which is the chief cause of small dry berries at harvesting time. It cannot be cured but can be kept in check somewhat by following the above methods of pruning and keeping the soil well cultivated to conserve moisture so as to furnish plenty of sap to overcome the restriction of the sap flow by the anthracnose.

**The Best Varieties of Small Fruit.**

The best varieties of black raspberries are Kansas and Eureka for early, and Cumberland and Gregg for the main crop. The Plum Farmer is a comparatively new variety which is proving good. For early varieties of blackberries the Wilson and the Rathbun are to be recommended. The Eldorado is the standard variety for the main crop, and Mersereau and Blowers are good for the late season. For a hardy variety nothing beats the Snyder. For red raspberries there is nothing equal to the Cuthbert; it is by far the best red raspberry. Perfection, Victoria, London Market and Wilder while Downing and Houghton hold first place among gooseberries.

As to distances apart for setting the small fruits, the gooseberries and currants are usually set four feet by five feet, rowed both ways. Black raspberries are set 3x6, red raspberries 3x5, and blackberries 4x7 feet.

In the planting of all of these fruits care should be taken to cut off broken roots and to cut back the tops some so as to balance the tops with the roots. In planting the holes should be large enough to take all of the roots without cramping and the earth should be firmly pressed around the roots. Cultivation should start soon after the planting and should be continued well into the summer.

**DON'TS FOR SPRAYING.**

Don't expect results if the work is not thoroughly done.

Don't think a week earlier or later than the date recommended is just as good.

Don't overspray. A continuous even coating should be left on the fruit and foliage; any material which runs off does no good.

Don't think that lime-sulphur will control apple blotch as well as Bordeaux mixture.

Don't apply Bordeaux mixture during wet weather; it is liable to russet the fruit.

Don't try to get along with a machine which is worn out or too small to do good work; if the work is worth doing it is worth doing well.

Don't think that spraying will pay unless the fruit is well marketed; spraying is only part of the battle.

**HIDING UNSIGHTLY OBJECTS.**

Have you an old fence, outbuilding, stump or other unsightly object you would like to hide? Who has not? I have found that it is an easy matter to make them into things of beauty with some of the simple vines or by planting shrubbery as screens.

One of the prettiest screens for a fence in the back yard, and to cut off a view of the barnyard, was composed of Altheas. The two-year-old shrubs were planted about a foot apart and the first year the branches were cut off about a foot above the ground. The second year they were trimmed off a foot higher. This made a massive hedge and even in winter when the leaves were off the fence and barn-

**The Essentials of Growing Raspberries.**

For the growing of blackberries and raspberries, a soil which is easily worked but not too rich, is desired. The plants are easily grown if kept well cultivated until about August and then sown to a cover crop. Pruning is also an important factor in the growing of these fruits. On an average of five fruiting canes to the hill of black raspberries and blackberries should be allowed. Weak new growth should be cut out during the growing season and when the stronger shoots get to be



yard could hardly be seen. In the summer the whole hedge was a mass of bloom. It did not take it long to grow to a height to completely hide everything behind it in the summer. I would not plant a great many shades of color, for there are some of them that do not look well with the others. The double white, Joan de Arc, is the prettiest to my notion, though there is a delicate pink that is good. I do not like the deep pink or the purple so well, as the colors are not pure enough.

To cover an unsightly building there is nothing to equal the Ampelopsis Veitchii, or Boston Ivy. It will cling to anything, wood or stone, and grows rapidly. It is a hardy perennial vine, and does not die back in winter. The foliage turns to brilliant colors in the fall.

Two good vines to train over fences or trellises are the Japanese Honeysuckle, and the Clematis Paniculata. The honeysuckle is almost evergreen, the foliage remaining a glossy green until very late in the winter. The Clematis is a rapid grower, and is sometimes killed by some, even to the ground at times, but the growth of the new shoots is so rapid in the spring that it soon reaches the top again. In the fall it is a mass of fragrant small blossoms in great clusters, so freely born as to almost hide the vine. I prize it above any vine I have ever grown, and it grows so easy, being thrifty and hardy.

For covering piles of rock, or anything where a trailer will be in demand the Winchuriana rose, or some of its hybrids, will be ideal, for the foliage of these is almost hardy, and they are very strong growers. The small double roses of the hybrids are borne in clusters, and are of many shades in the different varieties, but the Winchuriana, itself, is a single white rose, with a pretty yellow center. The leaves of all are small and closely set, a smooth glossy green, and of heavy texture, resisting heat and frost. The stems are small, and creep along the ground or over low objects. They can be trained over fences by placing the canes as they grow.

For an evergreen screen the Chinese Arborvitae is my favorite. It grows rapidly, is an upright compact grower, and the foliage is always green. The leaves are flat like the other Arborvitae, except the Rosedale. It has proven very hardy with me, resisting both heat and cold, and standing as much drouth as the old hardy cedar. These evergreens make fine specimens in the yard, or as a background for shrubbery or bright colored flowers.

Kansas. L. H. COBB.

#### SPRAYING APPLE TREES PAID WELL.

By co-operating with twenty-five orchardists the Missouri College of Agriculture was able to spray each orchard four times a year at a cost of \$22.26 per acre. The fruit on the unsprayed trees sold for \$18.05 per acre as compared with \$187.19 or more than ten times as much after spraying. This makes the average net profits of \$136.78, which repays the outlay for spraying, and five times as much more in addition. Few farm investments will pay as good returns.

#### TROUBLE DEPARTMENT.

##### Cutting Cions.

When is the proper time to cut plum and cherry cions, also how should they be cut?

Missaukee Co. J. B.

The proper time to cut cions for grafting is during the dormant season. If cut in the fall they should be tied in bundles and packed in slightly moist sand and kept from frost. It is thought that the fall cutting of cions is best, as it gives them time to callous over.

If you wish to do grafting this spring I would suggest that you cut the cions before there is any indication of the buds swelling. As you will have to keep them for some time, it would be

advisable to pack them in slightly moistened moss or bury them in sand and keep them from frost.

It is doubtful if you will have very much success in grafting cherry tree, as they are hard to graft on account of the brittleness of the wood. For the same reason some varieties of plums are also hard to graft.

The cuttings should be made of well matured and well budded wood of last season's growth. When cutting them from the tree they can be made any length over three buds long. At grafting time the cions are always cut to contain three buds.

#### TRANSPLANTING AND USE OF HAND CULTIVATORS

Transplanted plants give more favorable results than those grown from seed in the garden and thinned out. The principal advantage is that vegetables can be produced earlier if the plants are started in a hot-bed or boxes. The early vegetables are more appreciated than the later because the craving for green stuff after a winter of meat and canned goods is strong.

Planting seeds in the garden and then thinning the plants is a useless waste of seed and the weeds are likely to overtake them before one can tell where to hoe. Transplanting is generally done after danger of frost. A fine bed can be prepared for the plants which have developed under ideal conditions in a hot-bed.

Thinning is not a practical form of gardening. In case one has no hot-bed and the seed must be planted in the garden or when it is necessary to plant such seeds as cannot be grown in a hot-bed, it is well to have a small hand-planter. Most seedsmen handle them and they are practical in many ways. They can be adjusted to sow almost any kind of garden seed, sow it the right depth and in the proper thickness so that thinning will not be necessary.

They are handy about the garden. One with various attachments may be used to cultivate in a small way. If the garden is so small as not to admit of cultivation with a horse-drawn plow they cannot be surpassed as labor lighteners.

Indiana. J. L. JUSTICE.

#### GROWING EGG-PLANTS.

Egg-plants should be started in the hot-bed or in flats in the greenhouse or house. The seed germinates slowly—usually requiring from twelve to fifteen days' time, and a rather high, even temperature is necessary as if a setback is given the young seedlings they seldom amount to anything. When the young plants have two or three pairs of leaves they should be transplanted into pots or into fresh space in the beds, where they will have sufficient room, and grown on until time to plant out into permanent positions which should not be until the nights and soil are warm and all danger of frost past.

The plants may be set in rows two feet apart each way and cultivated by hand or horse. Very rich soil and liberal culture will produce an abundance of fine, large eggs which will be produced in succession well into the fall months. Although very sensitive to frost when young the plants are not injured by light frosts and will continue to yield fruit long after most of the garden products have passed.

The principal enemy of the egg-plant is the flea beetle, which attacks the young plants while still in the hot-bed, the cutworm which cuts them off soon after planting, and the potato beetle which often causes much damage. For the first and last spraying with arsenate of lead may be resorted to and for the cutworm surrounding the newly set plants with a paper or tin collar or placing poisoned meal about the stems will usually prove effectual.

Branch Co. IDA D. BENNETT.

## Have balmy spring at home during cold, raw weather!



Early spring chills and colds are inevitable with old-fashioned, drafty, uneven heating methods



The mild, delightful warmth of radiator heating makes every one happy and healthy

Real spring rarely sets in "for good" until it is nearly summer. The cold, damp, chilly days cause a lot of sickness and discomfort in homes which are not properly heated.

## AMERICAN & IDEAL RADIATORS & BOILERS

An IDEAL Heating outfit will show you its worth more forcibly during changeable, raw weather

than at any other time. The IDEAL Boiler is made to give just the volume of heat to keep the house genially warmed and comfortable *all over*, without waste of fuel or everlasting tinkering with the fire. These IDEAL outfits are easily put in old or new farm houses. One charge of fuel lasts 12 hours or more during chilly spring days.

### Get the heat that costs the least

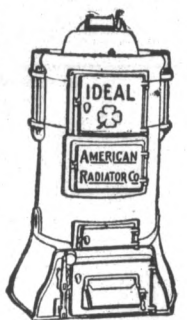
Decide now to put in IDEAL-AMERICAN heat. Don't spend another winter without it. Safeguard your family's health. Get the Ideal outfit which will just suit your needs. Running water not necessary. Burn the inexpensive fuels of your locality and make your house a real HOME!



A No. 020 IDEAL Boiler and 262 ft. of 38-in. AMERICAN Radiators, costing the owner \$185, were used to heat this farm house, at which price the goods can be bought of any reputable, competent Fitter. This did not include cost of labor, pipe, valves, freight, etc., which vary according to climatic and other conditions. The IDEAL outfit is the only feature of the house which is never worth less than you paid for it.

Sold by all dealers. No exclusive agents.

AMERICAN RADIATOR COMPANY



IDEAL Boilers do not rust or wear out—no repairs.

Write to Dept. F-3 Chicago

### Don't put it off

Write now—today—for copy of "Ideal Heating." It tells you all about the way to get the heat that costs the least.

### Make Potato Crop Safe

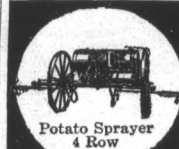
THE 1915 crop was short nearly sixty million bushels, in spite of a much larger acreage. A large part of the loss was due to blight which proper spraying would have prevented. Properly sprayed crops are always safe and always yield better because of the spraying, sometimes enough to pay for the machine first year in increased profits.

### IRON AGE

Potato sprayers are made in four and six row sizes, 55 or 100 gallons, double or single acting pumps. Easy to get at packing and valves. High pressure. Tank, wheels and frame are wood. Can't corrode. Wind shift and nozzle strainers with each machine.

Ask us for sprayer booklet, spraying guide and booklets describing any of our lines that you are interested in. Ask your dealer to show them.

Bateman Mfg Co. Box 249 Grenloch, N.J.



Potato Sprayer 4 Row



Potato Sprayer 6 Row



Fine for tomatoes also



for Potato Sprayer



They cover thoroughly



Complete or separate

Garden Seed Drills  
Wheel Hoes  
Potato Planters  
Weeders & Seeders  
Riding Cultivators  
Walking Cultivators  
Potato Sprayers  
Bucket, Barrel and Power Sprayers  
Potato Diggers  
Cornstubb Cutters  
Fertilizer Distributors  
Row Makers  
Cotton Planters  
Corn, Bean and Pea Planters  
Asparagus Ridgers  
Land Rollers

## TREES From Kalamazoo Direct To You.

At Wholesale Prices. Planting time is about here. Don't delay sending today for free Handsome Catalogue. Celery City Nurseries. Box 122. Kalamazoo, Mich.

### FLOWER LOVERS! GARDENERS!

Send For Our PLANT AND BULB BOOK, describing our Superb Gladioli, Chloes Started Cannas, Best strains of Asters, Pansies, Petunias, Snapdragons, Geraniums and many other fine Annual and Perennial Plants. Stock? Hardy Vegetable Plants in variety and quantity. Plants safely delivered by Parcel Post or Express. Catalog Free. E. J. SHEAP & SON, 424 E. EUCLID AVE., JACKSON, MICH.

### SEED POTATOES

Minnesota Grown Early Ohio \$4.00 per 150 pound Sack. Cash with order. Spring delivery, order now. E. C. BAKER & SONS, Jackson, Mich. Ref. Jackson Savings Bank, Produce Reporter Co., Chicago.



**Winter or Summer**



**UNITED STATES CREAM SEPARATOR**

**Every Season is "Open Season" for the U. S.**

It's at the two extremes in weather that a cheap or old style separator gets on your "nerves." Below zero or above ninety will spoil the health of most any Cream Separator we know of, except the U. S.

**Fortified against extremes of Temperature**

**In Coldest Winter**  
When it's a U. S. you don't have to heat a kettle of hot water to start the skimming. It works cold.  
When the oil in other separators has clogged or frozen up, the U. S. with no kinks, bends, or goose necks, in its oil tube—is running smoothly and silently, perfectly lubricated.  
When every liquid is freezing solid, you don't have to worry about the U. S. bowl being damaged by neglect. It empties itself automatically—always.  
When the gas engine "dies" if you are using power, the U. S. has a hand crank on the other side, and you can "go to it!" Just one of the many ways in which the U. S. provides against things going wrong.

**In Hottest Summer**  
When cream is produced by a U. S. it keeps longer, the sanitation being so perfect from top to bottom. Bacteria are "up against it" like flies in January.  
When others get "vile" the U. S. is sweet and clean with no milk drip on frame, or in gear case, or iron bowl chamber. The sanitary liner prevents.  
When ordinary separators turn the new batch sour, with bowl full from previous run, the U. S. starts fresh and dry, the bowl having drained itself.  
When washing-up time comes, there are fewer parts to clean. The U. S. mechanical washer does it in one-third time. Summer time is valuable.

Send for Free catalogue N

**VERMONT FARM MACHINE COMPANY**  
Chicago Salt Lake City      **BELLOWS FALLS, VT.**      Portland, Ore. Oakland, Cal.

**ATTENTION Silo Agents—Silo Users—Silo Buyers—CHALLENGE SILO Construction Wins Because It Is**



Made of best material, has perfect door Lock and Ladder, heavy galvanized (not black) channel steel entire length of door, heavy galvanized channel bars across door, heavy matching, most perfect machined joint, no metal, inside top hoop, base anchors, cable anchors and every stave is convex on outside to give full bearing to hoops. Erection expense cut to the minimum. **Prices Lowest Now—Investigate.**

Write for our special Silo Catalog. Also makers of CHALLENGE winners—wind mills, gasoline engines, ensilage cutters, feed grinders, wood and steel tanks, pumps, pump jacks, and lawn swings.

**CHALLENGE CO., 146 River St., Batavia, Ill.**

**Air-tight Silo of long-life metal**

Silage stored in air-tight ZYRO Metal Silos keeps sweetest, tastes better. The loss is less. ZYRO Pure Galvanized-Iron or Black-Enameled Silos are proof against wind, fire, shrinking, swelling, collapse and repair. Anti-corrosive, rust-resisting. A sure investment in satisfaction.

**ZYRO Costs less to erect**

Flanged metal sheets fit easily and are positively air-tight and moisture-tight.

**Free Booklet**  
tells whole story why ZYRO Metal Silos give best results. Write today for your copy.

**The Canton Culvert & Silo Co.**  
Makers of ZYRO Corn Crib and Grain Bin  
Box 908 CANTON, OHIO  
ANTI-CORROSIVE

**GUARANTEED SILOS**

Glazed tile or four kinds wood stave. Haul and easily erect Kalamazoo Silos when farm labor is most plentiful and cheap. Freight paid to your home town—Red wood doors, continuous opening door frame. Tile silos anchored by weight. Fire and frost proof. Superior to cement. Save money, too, by early-in-year shipments direct from nearest kiln, on factory to farm co-operation sales plan. Ask for booklet and details. Silo users make best local agents.

Write today—Dept. 621.

**KALAMAZOO TANK & SILO CO. KALAMAZOO, MICH.**

**Built To The Measure**



**Guaranteed Capacity**

WE build Sturges Cans to be more than just good milk containers. Each Sturges Can is built to be true to rated capacity. This is a big advantage in daily service. Saves work and time. forestalls disputes with city sealers—insures pleasing volume more. Only highest grade steel plate is used. Carefully timed, seams soldered smooth—easy to keep clean. Write for Catalog No. 46. Estd. 1885.

**Sturges Milk Cans**

Sturges & Burn Mfg. Co., Chicago

**LEARN AUCTIONEERING** at World's Original and Greatest School. Every branch of the business taught in 5 weeks. Write today for free catalog.

**JONES' NAT'L SCHOOL OF AUCTIONEERING**  
23 N. Sacramento Blvd., Chicago, Ill. Carey M. Jones, Pres.

## The Hog Situation

**B**UT a few of the farmers who live in the United States and make hog raising a business, know that nearly, if not one-half, of the pork meats produced in the world at the present time, are produced in this country. Nearly all countries of the civilized world get at least a part of the pork meats consumed in their country from the United States.

Wonderful changes have taken place in the manner of curing and handling meats for commercial handling. Formerly there was a great trade in what was termed "mess pork" and lard. What was meant by "mess pork" was salted pork made from what grew on the backs and sides of the hogs. Now the hogs are cut so as to get all the bacon strips possible, as the bacon and hams are considered the best of the pork meats, both at home and abroad. The bacon craze has developed in the last fifteen years, and is still on.

### Bacon in Large Demand.

There is wisdom in the great demand for bacon from many viewpoints. It is palatable and easily digested, even by those who think they have weak stomachs and are unable to eat and digest many other kinds of meat. There is no waste with bacon. But one of the principal things that gives it a standing in the commercial world is the fact that it is easily handled with safety in all parts of the world. If kept dry it endures in almost any climate, and is ready for use at any time in the home, and every place where people are fed in small or large numbers, in public works, in camps, on the march, or on the field of battle, it is available and prepared in a very short time.

In studying the trade situation we find that by far larger quantities of bacon and hams are demanded for export than of any other class of meat. A report says that "lard stocks are burdensome." Where formerly lard stocks have led in quantity, at the present time the ham and bacon meats are leading. For want of shipping facilities the export trade has fallen off, and yet in the face of this fact prices for hogs have advanced and reached a very high point early in the season.

### Supply and Demand.

It seems very certain that the home demand is very great. Laboring people, both male and female, are getting high prices for their labor, money is plentiful, fresh cuts of pork meats are popular, and there is a great demand for the palatable parts of the light-weight hogs. Even at the present high prices, the pork meats, in competition with mutton and beef, are the most economical meats for the laboring people and general consumers.

The statisticians tell us that in the United States there were during the latter part of 1915, about sixty millions of hogs. The great corn crop of 1915 aggregated 3,054,000,000 bushels. A large percentage of that great crop of corn was not merchantable grain, and farmers have fed the poor corn freely to the hogs and have been crowding them on to the markets in great numbers—numbers greatly exceeding those attained in former years. Notwithstanding the great numbers of hogs marketed the prices for all classes of hogs have advanced steadily from January 1 to the present time, the demand is taking all that comes at the advanced prices and is ready to take more.

### The Outlook is Encouraging.

From the present viewpoint the outlook for making money by raising, fattening and selling pigs in the market, is very encouraging. It is not probable that there are as many hogs in farmers' hands as there were one year ago. It is not probable that there will be as many pigs raised the present spring and summer as there was

in 1915, because many became discouraged when prices for pork hogs went down in November and December, and the prices for grain remained at a high point, they sold their breeding stock closely, and will not be able to duplicate the numbers of last year.

With present prices for pork meats in competition with high priced mutton and beef; with the great export demand on account of the war in Europe, it is safe to say that as long as the war lasts and the manufacturing industries that employ labor are active, there will be a demand for all the hogs that can be produced at a good profit to the producers.

At present all kinds of grain can be utilized as feed, even wheat, if ground and mixed with other feeds, and a handsome profit realized, if the right kinds of hogs are used as breeders, the pigs are crowded along toward market weights while young and kept growing to the day on which they are marketed.

### Turn Present Knowledge Into Money.

Our present knowledge of what can be accomplished by the use of pasture grasses and clovers, alfalfa, rape and peas, and other forage crops, will enable pig raisers to swell the profits in hog raising. Such feeds help to promote the growth, which means more lean than fat meat. Lean meat can be produced cheaper than the fat meat, and at the same time it is what the consumers call for, and it sells for higher prices.

There is a good opportunity to make good profits by raising and selling the right kind of hogs. Light hogs of about 200 pounds weight sell better, and can be raised cheaper, than the heavy hogs. Develop the pigs early in life and get quick returns.

Wayne Co.

N. A. CLAPP.

### CARROTS FOR BREEDING EWES.

I was thinking of feeding my ewes carrots before they have lambs. Would this be harmful?

Montmorency Co.

A. A. A.

A small feed of roots once a day will be beneficial to breeding ewes as to any other kind of live stock, since a little succulent feed in the ration will tend to promote better digestion and consequently a more vigorous and healthy condition of the animal. Roots should not, however, be fed too heavily to breeding ewes before their lambs are dropped. After the lambing period the feeding of roots can be increased to advantage, as this additional succulent feed will promote an increased secretion of milk greatly to the benefit of the young lambs.

### NOT A GOOD DAIRY RATION.

Kindly tell me what is the trouble with my ration for my cows and how I can better it. I am feeding all the ensilage they will clean up, from 35 to 50 pounds a day, according to the way the cows eat. Also all the cornstalks they will clean up good, six pounds of middlings and one and three-fourths pounds of cottonseed a day.

Monroe Co.

F. L.

Cornstalks and silage do not furnish enough variety of roughage to obtain best results. They will do, of course, but cows soon tire of the same feed day after day and will do better on a greater variety. Then, also, this roughage is woefully deficient in protein and a feed of alfalfa or clover hay would help out on both these points. I think gluten feed would be better and cheaper to feed with corn silage and cornstalks than wheat middlings because it contains more protein. Nothing else would improve this ration like one good liberal feed of clover or alfalfa hay. For heavy milkers perhaps a little larger feed of grain would pay. Feed grain according to the butter-fat produced or the milk produced.

COLON C. LILLIE.



# All black-tread Tires are NOT made— —of “BAREFOOT” Rubber



**T**HIS message is written in the Spirit of Prophecy.  
A few months ago there were no *black-tread* Tires on the Market *except* Silvertown Cord Tires, which we alone manufacture, under exclusive patents.

On January 1st there were no *black-tread* Tires on the market EXCEPT these same Silvertown Cord Tires (which we are not yet equipped to produce in half the quantity the market calls for), and—

—Goodrich FABRIC Tires,—made from the self-same “Barefoot Rubber” as we have for two years been putting into the Treads of Goodrich Silvertowns.

But,—

Soon there will be not only a horde of “Near-Cord,” Thread-Fabric “Cord,” and other IMITATION “Cord” Tires, but there will also be the customary crop of “Black-Tread” FABRIC Tire Imitations.

♦ ♦ ♦

**T**HIS is to tell the People, that Goodrich “BAREFOOT-RUBBER” Value lies not in its COLOR but in its composition.

It lies in the especially devised Texture, Flexibility, Cling-quality, Stretch, Lightness and Resilience of that “Barefoot Rubber” which, through years of Research, WE developed to match the marvellous Flexibility, Resilience and Power-conservation of our *two-layer-Cord* “Silvertown” Tires.

Color alone would have been little help in making “Silvertown” Treads *stand-up* in the tremendous ENDURANCE Tests which the 100-Mile-per-hour-Races of 1915 provided.

And Color alone,—Black, White, Red, or Gray—can do little for the Consumer who buys a “Me-too” Black-Tread Tire, of imitated make, on the assumption that all *Black-Tread* Tires are likely to be made of same materials.

♦ ♦ ♦

**T**HE marvellous “Barefoot Rubber” now used in Goodrich FABRIC Tires (as well as in Goodrich “Silvertowns”) is *black* only because we *elected* that color, primarily for distinction and *association with our SILVERTOWN CORD* Tires.

When, therefore, the usual crop of “flattering” Imitations sprouts upon the Market DON’T assume that OTHER *Black-Tread* Tires have in them the “BAREFOOT-RUBBER” which made the enormous ENDURANCE of Silvertown Cord Tires possible in the 90 to 103 Mile-per-hour Races of 1914-15.

No Tires on the Market, Size for Size, and Type for Type, are LARGER than Goodrich, and none more *generously good*, at any price.

“Barefoot Rubber” is now made into Goodrich FABRIC Tires,—Goodrich “Silvertown Tires,”—Goodrich Inner Tubes,—Goodrich Truck Tires,—Goodrich Motor Cycle Tires,—Goodrich Bicycle Tires,—and Goodrich Rubber Boots, Overshoes, Soles and Heels.

Get a sliver of it from your nearest Goodrich Dealer or Branch.

Note (by comparison), the *reasonably-low* Fair-List prices at which these best-possible Fabric Tires are being sold, on a BUSINESS basis.

THE B. F. GOODRICH CO.  
Akron, Ohio.

# GOODRICH

## “BAREFOOT”

# Tires

30 x 3	...	Ford Sizes.....	{ \$10.40
30 x 3½	...		{ \$13.40
32 x 3½	...		\$15.45
33 x 4	...	Safety Tread.....	\$22.00
34 x 4	...	“Fair-List”.....	\$22.40
36 x 4½	...		\$31.60
37 x 5	...		\$37.35
38 x 5½	...		\$50.60



# EASIER THAN EVER TO OWN GALLOWAY GALLOWAY!

**STOP!** Don't buy a separator until you first get my new, special proposition on 10,000 new 1916 Galloway Sanitary Cream Separators—also my new 250-page book of separator facts. One Galloway separator sold in a neighborhood sells from one to 25 more, and I am making this unusual proposition in addition to the new low prices, in order to open as much territory as possible for summer and fall business.

**PRICES LOWER ORDER TODAY**  
SAVE FROM \$25 TO \$50 NOW

The separator I make is equal to, if not better than, separators that sell for \$75 to \$95. My customers say it is positively worth what I would make, you would think were exaggerations! All I want you to do before you buy a cream separator of any make, kind or price, is to first get my CATALOG, read over the separator department in it, then try ONE FOR 90 DAYS, which is 180 times before you decide to keep it. Shipped from Chicago, Council Bluffs, Waterloo, St. Paul, Kansas City.

**LOOK!** These low prices made possible by increased output.

\$34.50	Skims 375 lbs. per hr.
\$39.50	Skims 500 lbs. per hr.
\$44.50	Skims 750 lbs. per hr.
\$49.50	Skims 950 lbs. per hr.

R-29

**Look**

This 250-page book tells how and why we make a better separator for less money and sell it direct from factory to farm.

**90 DAY TRIAL—5 NEW SELLING PLANS**

I sell my separators on your choice of five fair and square plans and GUARANTEE them for TEN YEARS against defective workmanship and material and BACK UP every sale with a \$25,000 BANK BOND. You have everything to gain and nothing to lose. It's only FAIR TO YOURSELF to investigate the NEW GALLOWAY SANITARY RATH-IN-OUT SEPARATOR before you buy ANY OTHER. It's up to you to judge. Get the catalog, read the plans, select the one you want, and then TRY THIS SEPARATOR.

**GALLOWAY SANITARY CREAM SEPARATORS**

Heavy, high carbon steel gear, shafts and bowl spindle; extra long bearings; strong, sanitary bowl, discs not fastened together; oil bath lubrication; big, roomy, seamless, pressed steel supply tank; both gear shafts and bowl spindle bearings supported by one solid casting; the base, a strong, substantial pedestal, no spindly, wobbly legs; only one foot from base to floor to give machine a good firm footing. Feet just far enough apart to brace and support machine perfectly from every direction. Helical drive gear offsets side thrust of worm wheel, takes friction off worm wheel shaft bearings. Heavy sanitary tinware, low bowl speed reduces wear on bearings and gears. No raw, sharp edges to cut up globules of butter fat.

**WM. GALLOWAY, Pres., WM. GALLOWAY CO.**  
Cream Separator Manufacturing Specialists  
183 Galloway Station Waterloo, Iowa

Write Today For My Big FREE Book

**Only \$24 DOWN and One Year To Pay**

**For any Size—Direct from Factory**

You can now get one of these splendid money-making, labor-saving machines on a plan whereby it will earn its own cost and more before you pay. You won't feel the cost at all.

**\$24 BUYS THE NEW BUTTERFLY**

No. 2 Junior—a light running, easy cleaning, close skimming, durable, lifetime guaranteed separator. Skims 95 quarts per hour. We also make four other sizes up to our big 600 lb. capacity machine shown here—all sold at similar low prices and on our liberal terms of only \$2 down and a year to pay.

**30 DAYS' FREE TRIAL GUARANTEED A LIFETIME**

You can have 30 days FREE trial and see for yourself how easily one of these splendid machines will earn its own cost and more before you pay. Try it alongside of any separator you wish. Keep it if pleased, refund your \$2 deposit and we will pay the freight charges both ways. You won't be out one penny. You take no risk. Postal brings Free Catalog Folder and direct from factory offer. Buy from the manufacturers and save money. Write TODAY.

**Albaugh-Dover Co., 2165 Marshall Blvd., Chicago, Ill.**

**Market the Milk**

Raise your calves and get the bigger money to which you are entitled. But do not feed the calf whole milk, with butter fat worth \$600 a ton.

You can sell all the mother cow's milk or butter and make your calf pay you a big profit on its feed, by raising it on

**BLATCHFORD'S CALF MEAL**

**Blatchford's Calf Meal**

The Recognized Milk Equal

You get 100 gallons of rich milk feed from 100 pounds of Blatchford's Calf Meal, and it costs you only one-fourth as much. It will make your calf grow fast and well. Blatchford's Calf Meal is composed of the elements the young calf needs in the most trying period of its life: is thoroughly steam cooked—prevents bowel troubles and other ills due to improper milk substitutes. Blatchford's Calf Meal assures quick, sturdy growth of young pigs at weaning time, without setback or falling off.

Write us for our Free Book on "How to Raise Calves Cheaply and Successfully Without Milk."

**Blatchford Calf Meal Factory**  
Blatchford St., Waukegan, Ill.

L. C. Beard, Engineer, Waukegan, Ill., writes: "I can say Blatchford's Calf Meal will pay anyone 100 Pct. that has calves to raise."

**IT SAVES TIME, LABOR AND**

**Veterinary Bills**

No Dosing—No Drenching Every Animal

Its Own Doctor Drop Brick in Feed Box—It Will Do the Rest

A Handy Medicine—It Salts 'em Too

Stock Lick It—Stock Like It

Best Worm Medicine and Tonic Ever Produced

You've tried the rest—Now use the Best

Contains Copperas for worms, Nux Vomica a tonic, Sulphur for the blood, Saltpetre for the kidneys and the purest Dairy Salt.

**Blackman Stock Remedy Co.**  
Chattanooga, Tennessee.

**A Wonderful FEED**

**THAT'S GUARANTEED**

—to produce more milk than any other ration either home mixed or purchased and do it without giving your cows constipation or udder trouble. Ready to use right out of the sack without any mixing.

**Larro-feed**

Absolutely free from adulterants and fillers, just like the feed you would mix for yourself, is a special combination of choice cottonseed meal, dried beet pulp, gluten feed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that's all; each ingredient weighed by automatic scales and all thoroughly mixed in huge power driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Sold on "money back if not satisfied" plan, the decision being entirely up to you. LARRO dealers almost everywhere; write if none near you.

**THE LARROE MILLING CO 1055 Gillespie Bldg., Detroit, Mich.**

**Fill It Only Once A Week**

Clean it only once a year. No wick. No glass globe. No danger even if rolled around in straw. Can't explode. Can't spill. Use it around barns, cow sheds, chicken houses, cellars, etc.

**COLEMAN GAS LANTERN**

Makes and burns its own gas. Gives 900 candle power of strong steady light. Can't blow out or get out. Made of heavily nickel-plated brass. Micrometer. Guaranteed for five years. Ask your dealer—if not on sale in your town yet, write for catalog of 20 different kinds Gas Lanterns, Table Lamps, etc. Dealer or agents wanted in every locality.

**THE COLEMAN LAMP COMPANY**  
206 No. St. Francis St. - Wichita, Kansas  
281 E. Sixth Street - St. Paul, Minn.  
1008 Summit Street, Toledo, Ohio  
402 Akard Street, Dallas, Texas  
40 South Clinton St. - Chicago, Ill.

## Feeding the Dairy Calf

THE dairyman has a great responsibility placed upon him in the manner and method employed in feeding the calf. If the dams have been properly nourished the value of the calves at birth depends largely, if not entirely, upon the intelligence and skill exercised by the dairyman in the breeding. But future possibilities of the newborn calf rest on the thought and skill that the owner puts into its feed, care, and management. Mistakes at this important period of the calf's life have probably lifelong influence, while a mistake in feeding and caring for a mature animal may only be temporary. Therefore, calf feeding requires skill and sound common sense, as there are no fast and hard rules to be laid down.

Young calves demand whole milk for the first few days. The calf should always have the first or colostrum milk of the cow and be allowed to nurse the cow until the eighth day, when the milk is suitable for human food. Feed often but avoid overfeeding. Teach the young fellow to drink and feed whole milk for at least three weeks, changing to skim-milk diet gradually.

### Feeding Skim-milk.

Skim-milk is a cheap feed for calves but should be fed carefully in limited quantities and only while it is warm and sweet. It may be made to form the principal diet for eight months or a year. But factory skim-milk should always be pasteurized to avoid the spread of tuberculosis. The best skim-milk is that which is fresh from the separator and is still warm. Experiments go to show that it is only one-fourth as expensive to raise a calf on skim-milk as on whole milk. Two pounds of grain with proper amount of warm skim-milk equals one pound of butter-fat. Buttermilk or whey may be profitably fed.

Milk that is too rich may cause serious trouble from scours, and in feeding such milk care should be used to give limited amounts at the proper temperature. The feeding of whole milk should be continued for about three to four weeks, when the number of meals may be reduced to two per day. From one-half to a pint of skim-milk may then be substituted for an equal quantity of whole milk. The amount of skim-milk may be gradually increased and the amount of whole milk correspondingly decreased until, at the end of a week or ten days, the calf is getting all skim-milk. Be sure to feed the milk at blood temperature.

Not more than ten to twelve pounds of milk should be fed daily until the calf is from five to seven weeks old. Later the amount may be increased to fourteen to sixteen pounds, and at three months may, though not always, go to about twenty pounds. The amount fed, however, must be carefully regulated by the ability of the calf to handle it without scouring.

The grain for calves should be fed first while the calf is quite small, with a little bran to aid in learning to eat. High-priced concentrates are unnecessary and give no better results than corn meal, oats and bran, ground barley, etc., when fed in proper combinations. A variety of feeds is advantageous and best results will usually be secured from mixtures.

### Feeding Roughage.

Roughage for calves should first be fed at two or three weeks of age when the grain ration is started. Good clean hay, either timothy, bluegrass, clover, or alfalfa may be used. Corn silage is an excellent calf feed when fed in moderate amounts. Good pasture is an essential after four to six months, and if the calf is turned out for only a few hours each day at first scours will be avoided.

The calf fed on whey should receive whole milk for the first week or two; it then may be changed to skim-milk. If this is not available it should be continued on whole milk. But a calf

will do far better not to receive whey until after five to six weeks old. It will take from ten days to two weeks more to complete the change to whey. About the same amount should be fed as with skim-milk. An excessive amount will cause undue largeness of the paunch. The feeder will need to give more care and attention to calves fed on whey than those fed milk.

### Give Calf Plenty of Water.

Too many farmers think that a calf drinking milk does not need any water before it. But the calf does not differ from other farm animals in this respect and should have water frequently available to it. Salt is also essential to calf development, and like water, should be kept continually available.

The careful management of the calf for the first year will have all to do with its further usefulness, either as a sire or as a milk producer. Avoid sudden changes in the diet and practice regularity in feeding. These small points are too often overlooked by farmers, who later awake to ponder over the problem why their calves are not as good yearlings as those of their neighbors who exercise due care and consideration in calf management.

Always provide warm quarters for the calf herd. And give them a dry shelter in wet weather. Give plenty of roughage and not too much grain so as to develop a large capacity for handling food which is desirable in all dairy animals. When the calf is six months to a year old milk may be omitted from its ration and a full roughage and grain diet used.

### Changing Feeds.

When the skim-milk diet is stopped the calf is deprived of a nitrogenous feed and its place must be taken by grain or roughage. The common tendency for calves to become too fat depends upon its temperament and upon its feed. Therefore, avoid too much corn. For grain, oats and barley are good; for roughage, bright clover or alfalfa hay with corn silage will give a succulent variety.

While size depends upon the breed and heredity to a great extent, it even more depends upon liberal and judicious feeding. It will be impossible to starve a good dairy qualities into a growing heifer but many a promising heifer has been starved into being a poor cow.

There are any number of great possibilities in the production of good cows but these are seldom if ever seen, appreciated, or attained except by an intelligent, thoughtful feeder. The earmarks of an intelligent feeder are seen in his herd. The calves are thrifty, active, with bright eyes, smooth, glossy coats, always hungry, and playful and lusty.

E. W. GAGE.

### DAIRY PROBLEMS.

#### Amount and Value of Silage.

I have two and a half feet of good silage left in the bottom of a 12-ft. silo. How many tons would there be, and what is it worth a ton?

Sanilac Co.

C. G.

The silage in the bottom of this silo will probably weigh 50 lbs. per cubic foot, and there is about 300 cubic feet, or seven and a half tons. This is worth about \$3.50 per ton, or about one-third the value of timothy hay. The value can only be estimated as there is no market for it. In fact, it is not a marketable product, only on our own farm to his own live stock.

#### How to Organize and Operate a Cheese Factory.

Kindly give the method of forming and operating a farmers' co-operative cheese factory. The farmers of this community are not satisfied with the methods employed by the large corporation operating in this district and wish to form an organization of their own.

W. F. B.

The successful operation of a cheese factory is not so very difficult if it only has a sufficient supply of milk to make success possible. This is the most im-



portant factor and yet it is the one most frequently overlooked in the organization of a co-operative cheese factory or creamery.

It is not good business to build a cheese factory on the promise of a supply of milk. This supply must be guaranteed. Make a bona fide contract with each prospective patron that he is to supply the milk from a certain number of cows for at least five years. If by actual contract you can secure the milk from enough cows to warrant the building and operation of a cheese factory then you are all safe. Otherwise somebody is liable to lose some money and another farmers' co-operative association will be liable to fail.

The actual organization can be accomplished in one of two ways. Organize a stock company. Sell enough stock at \$10 per share to build and equip the plant and have some surplus to operate on. Don't forget the surplus. After the stock is sold the stockholders meet and elect officers who have immediate supervision of the business. Be careful in the selection of officers and then support them.

Another and a better way, in my judgment, is to form a purely co-operative association. This is done by having all the patrons who have contracted to supply milk form the association and elect officers and directors. Every patron is a member of the association. This organization votes to build and operate a cheese factory. The organization borrows the money to build and equip the factory and furnish a surplus for operation. The money can be borrowed of any bank by joint note of the members of the association.

Then this organization votes that a certain amount, say five cents for every 100 pounds of milk delivered, or one cent for every pound of butter-fat delivered, be set aside as a sinking fund to pay this borrowed money when it comes due. The money can be borrowed so that it can be paid in installments. So much each year or every six months. The operating expenses afterwards can be paid in the same manner. In this way people pay in proportion to the benefit they receive. The proposition cannot fail as long as the former stick together.

With a good business head to employ the help and sell the cheese there is no danger of failure. Everybody gets just what is coming to him, as the business is done at actual cost.

#### Will a Twin Heifer Breed?

I have a two-year-old heifer, a twin, whose mate was a bull calf. I have been told such a heifer will always be sterile. Can you tell me if this is true?

Tuscola Co.

R. D.

Sometimes the twin sisters of bulls will breed and many times they will not. No one can tell. Keep the heifer and find out. I have had those that would breed and those that would not. Usually it may be said, they do not breed.

Of course, it will be some loss if the heifer does not breed. This can not be helped. But there will be no more loss than in raising steers. You say she is small and will be worth little for beef. True, she may not weigh as much or sell for as much as a larger animal. However, this does not mean that she will make you no profit. If she doesn't weigh as much neither will she cost as much to grow. You can get as much net profit for the food consumed possibly as with a larger animal, and it is net profit that really counts, not gross receipts.

#### Ration Might be Cheapened.

Kindly give me the correct amount to feed for my milch cows, of the following feeds. Have been feeding as follows, per day, for a cow giving 25 lbs. of 4.2 per cent milk: Bran, 3 lbs; middlings, 3 lbs; for a cow giving 34 lbs. of 4.5 per cent milk, bran, 4 lbs; middlings, 4 lbs., and all the clover and timothy hay they will eat.

Barago Co.

J. K.

This ration does not contain quite enough grain to bring it to the standard. Yet it is quite a liberal ration. Indeed, more liberal than the average dairyman feeds. It lacks somewhat in

variety to give best results. Besides it has no succulent food. It could therefore be improved along all these lines and probably could be cheapened in the improvement. This, however, would depend on the cost of feedingstuffs at the local market.

The rule for amount of grain is: One pound of grain for every pound of butter-fat produced in a week. A cow giving 25 pounds of 4.2 per cent milk would produce 7.35 pounds of fat a week and one producing 34 pounds of 4.5 per cent milk would yield 10.5 pounds of fat in a week. According to the rule, they would be entitled to an equal amount of grain.

I would advise substituting gluten feed for wheat middlings. It costs but little if any more and is richer in protein, at least I would change feed occasionally to give more variety.

In the absence of corn silage I would feed once a day, roots of some kind, beets, turnips, or potatoes. Adding this food need not necessarily increase the cost of the ration, as they would eat less of some other food.

#### How Large a Silo for Ten Cows?

How large a silo would be required to keep nine or ten cows for about eight months. Also, how many acres of corn, drilled in, would it take to fill it?

Montcalm Co.

W. S.

A cow will eat on the average about 30 pounds of silage a day. Large cows will eat more, small cows less. One cow then would eat 7,200 pounds of silage in eight months, and 10 cows 72,000 pounds, or 36 tons. A silo 10x24 will hold this amount if it is full when settled. You can have it full when settled if you have the extension top on your silo or if you refill it after it is settled. To make sure of enough silage I would advise having the silo a little taller, say 10x30 feet, which would make you 48 tons if the silo is refilled. If you have some silage left you can feed it in August when the pasture is short. It is better to have one of sufficient capacity when purchasing, and it is quite desirable to feed silage all through the dry weather in late summer. Personally, I think it would pay you to get a silo 10x36 while you are buying. It will cost but little more.

You can easily grow 10 tons of silage per acre. This is about the average yield. Some grow 20 tons or more. Ten tons is a good looking crop, 20 tons is a big crop. Above this amount is simply an immense crop.

#### Ration Lacks Protein.

Kindly balance a ration for milch cows from the following feeds and also add anything that is lacking: Corn silage not containing a full amount of corn on account of poor corn year; wheat bran at \$24.50; flour middlings at \$30; coarse corn meal at \$1.75 per cwt. I also have hay consisting of June grass, timothy and some clover. Would coarse middlings be better than flour middlings? They are \$5 per cwt. cheaper.

Grand Traverse Co.

F. V. W.

With the roughage fed in this ration deficient in protein, the grain ration must contain foods quite rich in this food nutrient to make a balanced ration. Wheat bran and corn meal are both good foods but do not contain sufficient protein to balance the deficiency in the roughage. I would not use the middlings and would substitute in their place gluten feed, oil meal or cottonseed meal.

I would suggest that you mix bran, corn meal and gluten feed equal parts by weight. Feed what silage and hay they will eat and then one pound of grain per day for every pound of butter-fat produced in a week. For instance, if a cow produces seven pounds of fat in a week, give her seven pounds of this grain per day.

COLON C. LILLIE.

#### CATALOG NOTICE.

"The Solution of the Silo Question" is the title of an illustrated folder sent upon request by the E. W. Ross Co., Springfield, Ohio, manufacturers of the Ross "In-de-str-uct-o" metal silos. It contains information of value on the superior features of this line of silos.

## Good-by, Guess Work

THE New Sharples "Suction-Feed" is the only cream separator which eliminates guess work from cream production. All other separators have to be turned at exactly the speed indicated on the crank or they will lose from 7 to 13 pounds of butterfat per cow per year. The Purdue Experiment Station and other scientific investigators have proven these figures (see Bulletin No. 116, Vol. 13.)

This "guess" speed is used by 19 operators out of 20, because it is impossible to turn the crank at exactly the right speed.—It is much easier to turn it slower—and, whenever you do, you lose cream. Even a speed indicator will help but very little, as you won't and can't watch it every minute.

So we say to you dairymen: Quit guessing about your separator speed and your separator profits. Use

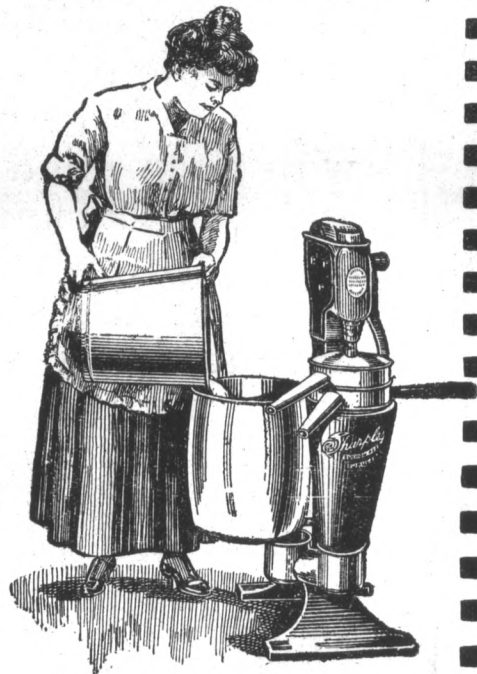
## THE NEW SHARPLES SUCTION-FEED

Separator and know that you get *all the cream all the time.*

Whether you turn faster or slower, the bowl of the Suction-Feed *drinks in just the right quantity of milk.* The feature is entirely automatic; if you are tired, you turn slower (which is easier) and, if in a hurry, you turn faster and finish so much sooner. No matter how you turn, the New Sharples always skims clean.

The Sharples cream is always of *even thickness*, whether you turn fast or slow. The Supply can is but knee high so you can fill it without any back breaking effort. The three-piece Sharples bowl is lighter and simpler than any other—*no discs to wash.*

All these money-saving and trouble-preventing features are described in a handsome catalogue; "*Velvet*" for Dairymen. Send for a copy, now, while you think of it. Address Dept. 18.



## The Sharples Separator Co.

Also Sharples Milkers and Gasoline Engines

West Chester - - - Pennsylvania

Chicago

San Francisco

Toronto

Portland

M



National Fire Proofing Company

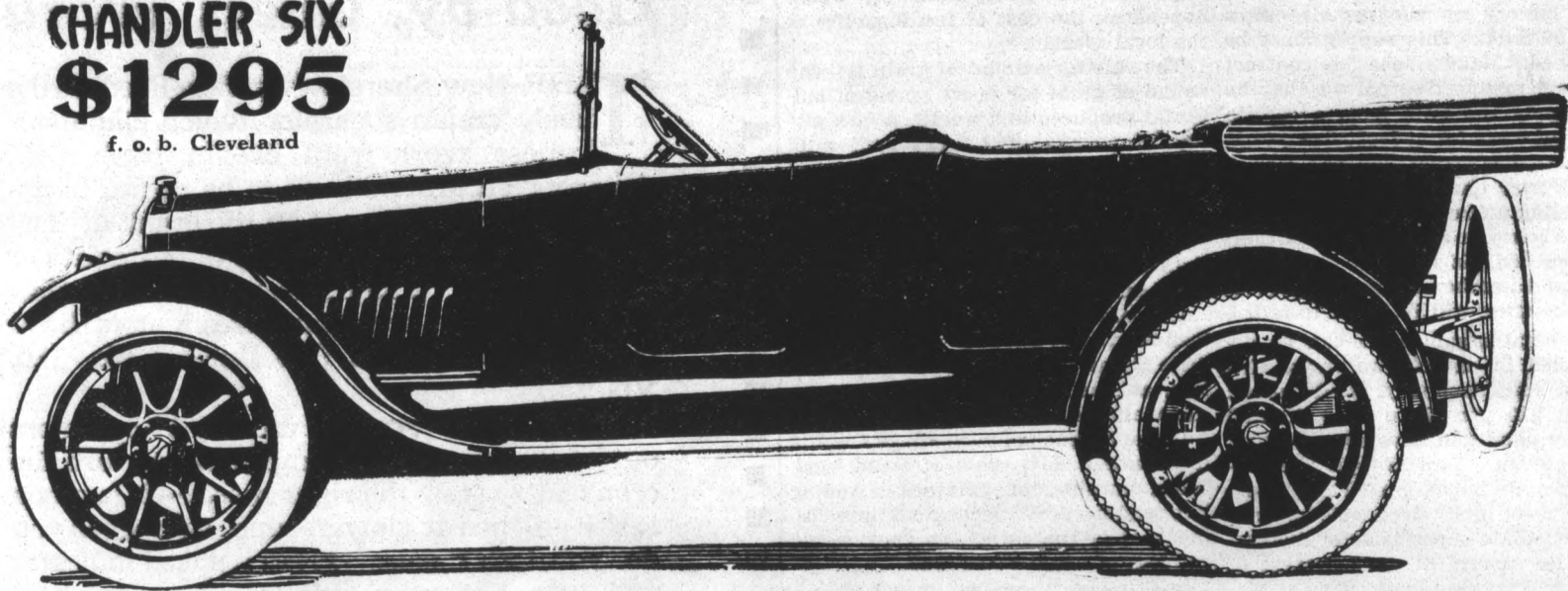
### Use NATCO Drain Tile—Last Forever

Farm drainage needs durable tile. Our drain tile are made of best Ohio clay, thoroughly hard burned. Don't have to dig 'em up to be replaced every few years. Write for prices. Sold in carload lots. Also manufacturers of the famous NATCO IMPERISH-ABLE SILO, Natco Building Tile and Natco Sewer Pipe. 1115 Fulton Building, Pittsburgh, Pa.

When Writing to advertisers please state that you saw their ad. in The Michigan Farmer.



The New and Greater  
**CHANDLER SIX**  
**\$1295**  
 f. o. b. Cleveland



## We Cannot Describe the Beauty of the New and Greater Chandler

**I**F YOU have seen the new Chandler touring car body you understand why we do not attempt to describe it. If you have not seen it visit the Chandler sales-room today and get a new idea of motor car beauty.

This new touring car is the most beautiful car of the year. There can hardly be any argument as to that. Someone having reason to be biased might dispute this, but you are unprejudiced---you will look with open mind for grace of line and beauty of finish---and you will agree with what countless thousands at the automobile shows have said very positively. They have said the Chandler is the most beautiful car of the year. So go and see it.

The walnut-paneled tonneau cowl has pleased the public everywhere. It will please you. It gives the car a very unusual air of complete finish. It reflects, too,

the thought which the Chandler Company gives to details throughout the car, inside and outside. And remember this, any type of touring body other than the Chandler tonneau-cowl type will be old-fashioned and out of date before the season is over. The old style design, with the backs of the front seats projecting abruptly above the body, looks odd even now.

See the Chandler. You will be delighted with the **Style** of the car and you know **now** that you can **depend** on it mechanically---depend on it for all the power, speed, flexible control and day-in-and-day-out service that you could ask for in a car at any price.

For the Chandler chassis, distinguished by the marvelous Chandler Motor, has been proven **right** through three years of service in the hands of thousands of owners. It is free from any hint of experimentation, free from any hint of untried theory.

In spite of higher prices of all materials entering into it, the Chandler is still noted for highest quality construction throughout and the finest equipment

Seven-Passenger Touring Car	-	\$1295
Four-Passenger Roadster	- - -	\$1295

The New Chandler Catalogue illustrates the New Big Touring Car, the Four-Passenger Roadster, other body types and all mechanical features fully. If you do not know your Chandler dealer write us today

CHANDLER MOTOR CAR CO.

2704-2734 E-131st St., Cleveland, Ohio



# Magazine Section

LITERATURE  
POETRY  
HISTORY and  
INFORMATION

**MICHIGAN FARMER**  
AND *LIVE STOCK* JOURNAL  
PUBLISHED WEEKLY. ESTABLISHED 1843.

The FARM BOY  
and GIRL  
SCIENTIFIC and  
MECHANICAL

This Magazine Section forms a part of our paper every week. Every article is written especially for it, and does not appear elsewhere

YOU certainly deserve decidedly drastic treatment for the way you led me into that ridiculous flunk in Virgil this morning," exclaimed Tom Masson, throwing down the classic volume in disgust. "No wonder the class all roared, and Prof. Lane's eyes twinkled over the tops of his glasses at my rendering of 'Lucus in urbe fuit media, laetissimus umbrae' as 'There was a light in the middle of the city with a very broad shadow;' and Jim Watson nudged me and asked in a stage whisper if I was speaking from recent memories.

## "Looflirpa"

By  
BESSIE L. PUTNAM

"Of course, I should have known that lucus meant grove, but when you volunteered the free translation the other way, I naturally thought the word came from lux; and then 'shadows' instead of 'shade' was an easy matter. But it was a mean trick to fool me so, when you knew that I was late getting in last night and was all tired out.

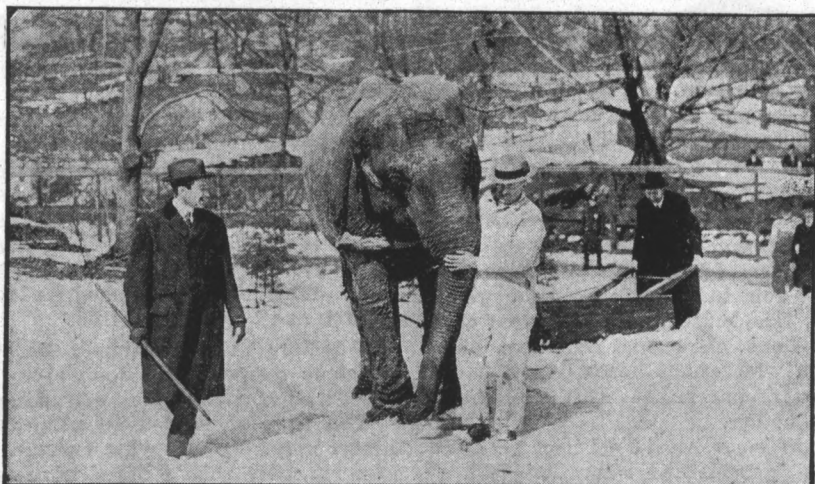
"But Nell, there's something else on hand—and you're to be in it this time.

We're going over to Blake's this evening; and I must have a few more chemicals to carry out our little program; but I need awfully to get an hour or two of sleep first. So if you'll just skip down town and get them for me, we'll call it square, and you can thank your lucky stars that you did not get a retributive dose which you'd remember to tell your grandchildren in recounting to them the pranks of All

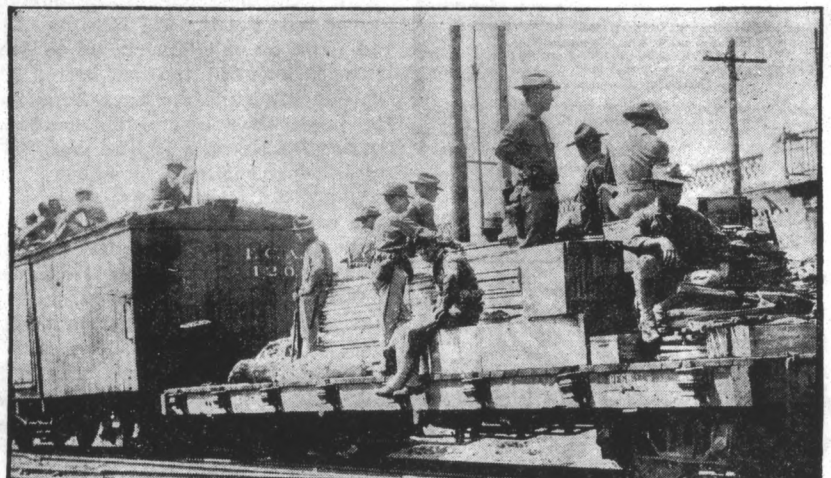
Fools' Day—even if you did not see fit to disclose your own identity in connection with it."

"I'm not afraid of your 'dose,' understand," was Nell's reply. "I guess I can keep my eyes open on April Fool day, and that 'bright light' of yours, with the accompanying 'shadows' is sufficient to keep me in the straight path for the day. But if I can be of any service in furthering your plans for this evening, of course I'll gladly go. But don't look upon this as in any sense a bribe. Do your worst with me today, and I'll try to keep even."

## WORLD EVENTS IN PICTURES



One of the Large Elephants at Central Park, New York, Pulling Snow Plow.



American Troops and Supplies Being Moved Toward the Mexican Border.



Throwing Grenades from Trenches Before Verdun.



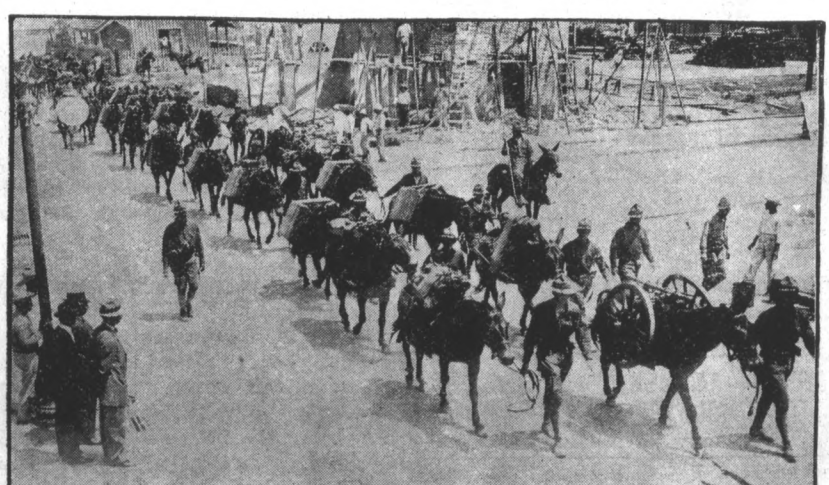
John McCormack, Famous Irish Tenor and His Daughter.



Francisco Villa Dashing Ahead of His Troops.




Underground Office of a French Staff Officer in a Well-fortified Dugout.



U. S. Mountain Battery, Part of the Punitive Expedition Sent into Mexico.



**DONT GROPE**



**LIGHT YOUR HOUSE. BARN & OUTBUILDINGS**

WITH THE

**Thomas A Edison**

MARK

**ELECTRIC LIGHT PLANT**

Do You Grope in the Barn, with a lantern? Some day the lantern will upset in the hay. Insurance doesn't cover "loss of use."

It Costs Less Than You Imagine, to have electric light everywhere on your property. It is the safest, cleanest, brightest illuminant—and the one that requires the least attention, if you use the Edison Lighting Plant, which includes the Edison Storage Battery.



**COMPLETE EDISON LIGHTING PLANT**

Catalog X describes the plant for your home. It takes away every last "reason" you think you have, for getting along without modern electrical conveniences.

**EDISON STORAGE BATTERY CO.**  
237 Lakeside Ave., Orange, N. J.  
2025 Michigan Ave., Chicago, Ill.  
San Francisco New York Boston  
Distributors Everywhere

Edison Storage Battery Co.  
237 Lakeside Ave., Orange, N. J. Send Catalog X to  
My Name.....  
My Address.....

**THIS 1916 Model 30 DAYS Free Trial**



**EXTRAORDINARY OFFER—30 days free trial on this finest of bicycles—the "Ranger." We will ship it to you on approval, freight prepaid—without a cent deposit in advance. This offer absolutely genuine. WRITE TODAY for our big catalog showing our full line of bicycles for men and women, boys and girls at prices never before equalled for like quality. It is a cyclopedia of bicycles, sundries and useful bicycle information. It's free.**

**TIRES, COASTER-BRAKE rear wheels, inner tubes, lamps, cyclometers, equipment and parts for all bicycles at half usual prices. A limited number of second-hand bicycles taken in trade will be closed out at once, at \$3 to \$8 each.**

**RIDER AGENTS** wanted in each town to ride and exhibit a sample 1916 model Ranger furnished by us.

**It Costs You Nothing to learn what we offer and how we can do it. You will be astonished and convinced. Do not buy a bicycle, tires or sundries until you get our catalog and new special offers. Write today!**

**MEAD CYCLE CO., Dept. W-77 - CHICAGO, ILL.**

**RUN ON KEROSENE 6c per H.P. for each 10 HOURS**

**ELLIS ENGINES**

ELLIS Engines mean more power at one-third the cost. Strongest, simplest, most powerful engine built. No cranking, less carbonizing, minimum vibration, easiest to operate. Patent power regulator, force feed oiler, auto type muffler, ball bearing, governor adjustable while running.



1½ to 18 H. P. are sold on 30 days trial with 10-hour guarantee, freight prepaid. Write for new, valuable book, particulars and special prices now.

**ELLIS ENGINE CO.**  
2244 E. Grand Blvd. Detroit Mich.

**Maple Syrup Makers**

You get best Results with our **Champion Evaporator**

Quick work, fuel-saving, durability and **BEST QUALITY OF SYRUP.**

Write us for CATALOGUE.



**Champion Evaporator Company, Makers, Hudson, Ohio**

**WANTED—AN IDEA.** Who can think of simple your ideas, they may bring you wealth. Write for "Needed Inventions" and "How to get your Patent and Your Money." **RANDOLPH & CO., PATENT ATTORNEYS, DEPT. 67, WASHINGTON, D. C.**

**LIGHTNING** Rods 6¢ per ft. Best quality. Copper cable. Buy direct, Fr't prepaid. Satisfaction guaranteed. Complete installing directions. Valuable catalog and sample free. **Robinson & Seidel Co., Box 25, Washingtonville, Pa.**

He handed her the list: Potassium iodide, mercuric chloride, sulphur, potassium chlorate, loofirpa.

"Most of the names have a familiar ring," said Nell, glancing it over. "It's the first two that you use in 'turning water to wine', isn't it? Both colorless liquids until you mix them. Say, will you let me do the mixing tonight if I get them for you?"

"Are you sure you'd be careful and not get them scattered? You know that cercuric chloride is another name for corrosive sublimate? Deadly poison. One must always be very careful in handling chemicals."

"Sure, yes; you can trust me for that. And the sulphur and potassium, you pulverize a pinch of each together, mixing and blending thoroughly, and then get someone to strike them on a stone with a hammer; and when they have hit hard enough, it sounds like the old-fashioned Fourth of July? You'll get Collins into this game, I suppose. He never does anything by halves."

Tom nodded his assent.

"And what's that last, 1-o-o—?"

"Loofirpa. I was going to explain about that. I'm dreadfully afraid you can't find it in town. I should have ordered it from a New York supply house a week ago, but it somehow slipped my mind. In fact, I did not know until today that we were going to do this. But it's the best one in the bunch, if we can only get it. Try Eastman first; and if he doesn't have it, go to Stock. If these both fail you had better go to Dr. Pond and tell him how we're stuck. He might have some on hand. Of course, Dr. Eaton would be more likely to, as he specializes in surgery. But he's an old grouch—you might not care to risk an interview."

"Tom Masson, when did you ever know me to shirk an unpleasant thing if fun loomed up behind it? I'll get that stuff if there is a grain of it in town."

The clerk at Eastman's was a new man—boy, rather—who puzzled faithfully over the unfamiliar term, blushing and turning pale alternately, as he faced the possibility of a blunder on his part costing him his position. "What is it for?" he meekly stammered, hoping to gain some happy inspiration through the reply.

"It's a chemical my brother wants for some experiment," was the reply; "I've never studied chemistry myself, and I can't really explain just what."

He vainly looked over the labels on the long row of bottles, but the name suggested nothing with which he was familiar. He searched through the catalogues of two or three supply houses with no better success. "Has it any other name?" he asked in desperation. Nell did not know, and he was finally forced to sheepishly admit that he did not know it, and she would have to wait until the return of the proprietor, who was out of town for a few days.

At Stock's she had no more success. Mr. Stock read the slip, eyed her sharply, glanced at the name again furtively, and finally called his partner aside. After a little private conversation, he returned with the declaration that they did not keep it.

Nell was quite as much puzzled over their queer demeanor as she was disappointed through the second failure. She wondered if this was of such a virulent nature that it was sold only under the orders of a physician. They might know that she was old enough to keep it out of the way of children—the same as corrosive sublimate. She halted at the door, almost on the point of asking an explanation and giving reference if necessary; for of course she could get Dr. Pond. But pride urged her on.

"I'll try Dr. Eaton next," she said to herself. "Tom said he'd be more likely to have it, than Pond, and I'll be late dressing if I have to go much farther."

She rang the bell, and little Bertha answered. "Yes, papa's in," she answered with hesitation, "but he's awful busy, and said not to disturb him un-

less it was something very important."

"This is important, very," was Nell's reply; for she thought of how much the complete success of the evening depended upon her quest.

She was shown into the office, and Dr. Eaton soon appeared, demanding, "What will you have, miss?" in a tone so authoritative that she almost forgot her errand.

"It's this," she stammered, clutching frantically at her bag and drawing out the crumpled slip of paper.

The doctor took it with a stern look, glanced at the name, looked again, and then seemed at a loss how to answer her. He slowly turned the paper over then read the entire list from first to last, as if hoping to gain some clue from the companion items.

"I'm afraid I'm just out," he said thoughtfully; "but I'll see," taking the paper into the next room. There Nell saw his reflection in the mirror, as he took down and examined volume after volume, in the same way the clerk at Eastman's had done. After a delay of at least ten minutes he returned with the surprising intelligence that he had "just sold the last of it yesterday."

"He don't know what it is; that's plain," thought Nell, proud of Tom's superior knowledge. "My brother does know chemistry," she said to herself, "even if I can trip him on Virgil."

As the doctor was about to return the paper, another thought seemed to flash through his mind. He opened it again, re-read it, surveyed it with critical eye and lowering brow. His eyes flashed as he returned it. "Tell your brother that I never kept it and never expect to," was his curt dismissal as he abruptly showed her to the door.

Nell smiled to herself after safely out upon the street. "My eyes must have told him that I knew he was at sea," she mused, as she hurried on to Dr. Pond, the genial old home physician, who would honestly tell her at once if unfamiliar with the elusive commodity.

"Got some April Fool trick ready for me?" was his first salutation.

"No; it's only an order to fill for Tom's chemistry, some experiments he wants to make at a party this evening. He said I might have trouble in getting this last thing—I've got all the rest. But he's so anxious. It's a new experiment entirely. He didn't know but you might keep it. I've been to the drug stores, and to Dr. Eaton, as Tom said it might be used especially in surgery. And the old fake, after looking wise, and digging down into all his books after it when he thought I wasn't looking, told me that he had 'just sold out.' And then a minute after, no doubt realizing that I had seen through his little dodge around the

words, 'I don't know,' showed me out post haste with the intelligence that 'he never had kept it and never would.' He gets more unbearably ridiculous every day of his life!"

"Yes, the things we don't know are bad enough usually, even when we make an honest confession of them. I shall have to confess that I never heard of 'Loofirpa' before. Tell your brother that it is not listed in our materia medica. He might get it at the hardware. Have you tried there?"

How glad Nell was of the suggestion. She would go to Hank Neville, at Salem's. She and Hank were tip-top friends, and he would do his best to help her out.

Hank scanned his assortment of paints, oils, and varnishes rather doubtfully. "Perhaps it might be some proprietary stuff," he ventured to suggest to her.

Nell thought it queer that Tom had it listed among his chemicals if such was the case.

Again he scanned the paper. "If I were in your place I'd go home and rest," he advised, with a peculiar smile on his face. "Tell Tom that the druggist said he must have meant it for 'Sarsaparilla,' and take a bottle of that to him. You've tramped far enough for one day."

"What do you mean?" asked Nell indignantly; "do you suppose I'd do such a thing as that, and spoil his program? If I can think of another possible place, I'll try, if it is at the farthest end of town."

"Well," laughed Hank, "I don't think you will find it in town."

Nell reluctantly turned homeward. There seemed no use of looking elsewhere. She minutely related her experiences to Tom, who was in more than usually good spirits after his sleep. When she had finished, he leaned back and laughed heartily.

"I declare," she exclaimed, displaying some temper, "you don't seem to care at all about my lack of success."

"You have succeeded so admirably in accomplishing just what I wished—so much more than I dared hope for, that—"

A flash gleamed across her face, one which came as suddenly as that which had lowered the brow of Dr. Eaton when he stopped short, recalled her order, read it to himself forward and then backward, the mystical term "Loofirpa." Her face burned with mortification and chagrin as she recalled the mysterious treatment at Stock's, Dr. Pond's bland smile, and Hank's kindly advice to "go home." It was all plain now. She went to her room convinced that it is never safe to promise that you will not be a victim, just because you remember that it is April Fool Day.

## Light of Western Stars

By ZANE GREY

Madeline's quick sight caught the ball as it lined somewhat to the right. It was shooting low and level with the speed of a bullet. At a hundred yards or so it began to rise. At two hundred it seemed to be sailing into the sky. It went up and up in swift, beautiful flight, then lost its speed and began to sail, to curve, to drop, and it fell out of sight beyond the rim of the mesa.

Madeline had never seen a drive that excelled this one. It was magnificent, beyond belief, except for the evidence of her own eyes.

The yelling of the cowboys probably brought Nick Steele out of the astonishment with which he beheld his lucky shot. Suddenly alive to the situation, and resting nonchalantly upon his club, he surveyed Stillwell and the boys. After their first surprised outburst they were dumb.

"You-all seen that?" Nick grandly waver his hand. "Thought I was josh-

in', didn't you? Why, I used to go to St. Louis an' Kansas City to play this here game. There was some talk of the golf clubs takin' me down east to play the champions; but I never cared fer the game. Too easy fer me! Them fellers back in Missouri were a lot of cheap dubs anyhow, always kickin' because whenever I hit a ball hard I always lost it. Now you'll can go ahead an' play Monty and Link. I could beat them both, playin' with one hand, if I wanted to; but I ain't interested. I jest hit that ball off the mesa to show you. I sure wouldn't be seen playin' on your team!"

With that Nick sauntered away toward the horses. Then Nels strode into the limelight. He picked up the club Nick had used and called for a new ball. Stillwell carefully built up a little mound of sand, and, placing the ball upon it, squared away to watch. He looked grim and expectant.



Nels was not so large a man as Nick, and did not look so formidable as he waved his club at the gaping cowboys. Still he was lithe, tough and strong. Briskly, with an insouciant manner, he stepped up and delivered a mighty swing at the ball. He missed. The power and momentum of his swing flung him off his feet, and he actually turned upside down and spun round on his head.

The cowboys howled. Stillwell's stentorian laugh rolled across the mesa. Madeline and her guests found it impossible to restrain their mirth; and when Nels got up he cast a reproachful glance at them. His feelings were hurt.

His second attempt, not by any means so violent, resulted in as clean a miss as the first, and brought jeers from the cowboys.

Nels red face flamed redder. Angriely he swung again. The mound of sand spread over the teeing-ground, and the exasperating little ball rolled a few inches.

"Shore, it's jest that crooked club."

He changed clubs, and made another signal failure. Rage suddenly possessing him, he began to swing wildly. Always it appeared the elusive little ball was not where he aimed. Stillwell hunched his huge bulk, leaned hands on knees, and roared his riotous mirth. The cowboys leaped up and down in a passion of boisterous laughter.

"You can't hit thet ball!" sang out one of the noisest.

"Nels, you're too old!" Stillwell shouted. "Your eyes are no good!"

Nels slammed down the club; and when he straightened up, with the red leaving his face, then the real pride and fire of the man showed. He stepped off ten paces and turned toward the little mound upon which rested the ball. His arm shot down, elbow crook-hand like a claw.

"Aw, Nels, it's jest fun—that's all!" yelled Stillwell.

But swift as a gleam of light Nels flashed his gun, and the report came with the action. Chips flew from the golf-ball as it tumbled from the mound. Nels had hit it without raising the dust. Then he dropped the gun back in its sheath and faced the cowboys.

"Mebbe my eyes ain't so orful bad," he said coolly, and started to walk off.

"But look ahead, Nels," replied Stillwell. "We come out to play gol-lof. We can't let you knock the ball around with your gun. What'd you want to get mad for? It's only fun. Now you an' Nick hang round heah an' be sociable. We ain't depreciatin' your company none, nor your usefulness on occasions; an' if you just hain't got in-born politeness sufficient to do the gal-lant before the ladies, why, remember Stewart's orders."

"Stewart's orders?" queried Nels, coming to a sudden halt.

"That's what I said," replied Stillwell with asperity. "His orders. Are you forgittin' orders? Wal, you're a fine cowboy. You an' Nick an' Monty, 'specially, are to obey orders."

Nels took off his sombrero and scratched his head.

"Bill, I reckon I'm some forgetful; but I was mad. I'd 'a' remembered pretty soon, an' mebbe my manners."

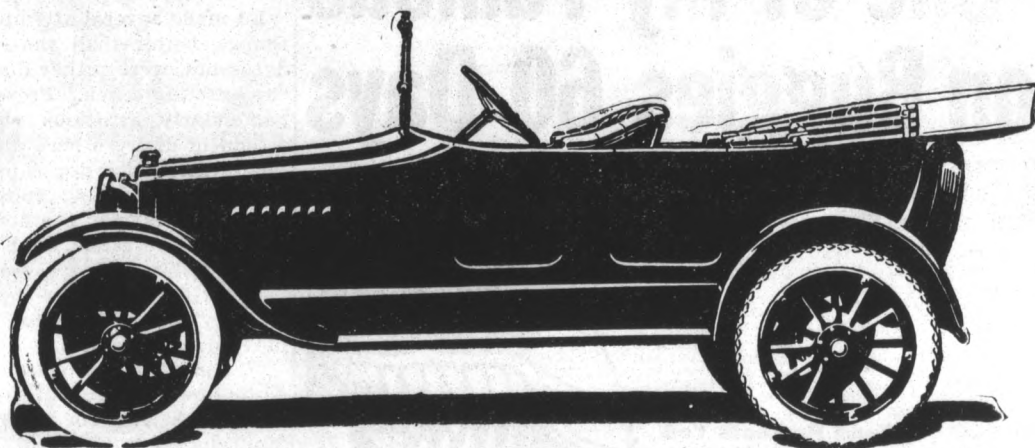
"Sure you would," replied Stillwell. "Wal, now, we don't seem to be proceedin' much with my gol-lof team. Next ambitious player step up!"

In Ambrose, who showed some deftness at the driving stroke, Stillwell found one of his team. The succeeding players, however, were so poor and so evenly matched that the earnest Stillwell was in despair. He lost his temper just as easily as Nels had. Finally Ed Linton's wife appeared, riding up with Ambrose's wife, and perhaps this helped, for Ed suddenly disclosed ability that made Stillwell single him out.

"Let me coach you a little," said Bill.

"Sure, if you like," replied Ed; "but I know more about this game than you do."

"Wal, then, let's see you hit a ball



## The evidence seems to be that this Saxon "Six" excels

Motor car buyers this past year saw strenuous rivalry in the price-class of Saxon "Six." Both "Fours" and "Sixes" filled the field.

Before many of each make were long in owners' hands the air was charged with claims and counter-claims.

The public at large found it difficult to reach definite conclusions. So thousands waited till the test of time and trial determined the class car from the merely mediocre.

And in waiting they proved their good judgment. For the rigors of the road soon thinned the ranks of many motor cars that failed to meet present-day standards.

At last it became obvious that one car had fairly earned top place. Those who gauged values with unprejudiced eye found the evidence only too clear.

Record after record had fallen before Saxon "Six." It had set a pace too hot for most. In speed, in power, in hill-climbing, in acceleration, and in economy it seemed to out-class all others in its field.

And those critical ones who had watched and waited now made their decisions.

The rush started at the New York Motor Show. In a week's time 1250 orders for Saxon "Sixes" poured in.

Nor was this a momentary sales spurt. For following close upon its heels came the Chicago Show where 2150 orders were received. So when the month of January closed a record had been hung up—orders for 4085 Saxon "Sixes" had been recorded. And this in the face of the fact that winter months ordinarily are dull months.

Still there was no abatement. By wire and mail and cable the orders swept in. Buyers who had fronted the early flood of paper promises unmoved were capitulating to the proof of Saxon "Six" performance. And the month of February closed with another record established—a clear gain of 150 per cent over February of 1915. Even as yet there is no sign of let-up.

So now—at the end of a year in owners' hands—the supremacy of Saxon "Six" seems unquestioned. It has won an amazing welcome. Men see in it a marvel of motor car progress.

And the price of Saxon "Six"—a new price for a quality car—recasts former ideas of what a high-grade car should cost.

For in this new series Saxon "Six" at \$785 you get a car whose very lightness denotes expensive materials and ablest engineering.

Whose beauty and luxury are of resistless attractiveness. Whose smoothness and flexibility are comparable to those of the multi-cylinder motors of the newly designed costly cars.

Frankly, the demand is fast approaching our production limit. Late comers may be forced to content themselves with less than a Saxon "Six." So we urge you to see your Saxon dealer at once.



<b>"Sixes"</b>	
Touring Car	\$785
Roadster	785

<b>"Fours"</b>	
Roadster	\$395
Delivery Car	395

**Saxon Motor Car Co.,**  
Detroit

*The Saxon Motor Car Company does not announce yearly models*

Write for interesting booklet "Saxon Days." Address Dept. 19.

(380)



## PINE TREE BRAND TIMOTHY SEED

**Extra Recleaned and Pure  
At Moderate Price**

*For Sale by all Dealers or Write*

**The Albert Dickinson Co.,**  
CHICAGO - MINNEAPOLIS



# Use One of My Famous Bohon Buggies 60 Days

## FREE

Order a Bohon Buggy on my 60 days' approval test. Drive it back of your own mare on the roughest roads you can find. Note the extreme riding comfort, the spring action, the extra strength that is built into the wheels, chassis and throughout the entire vehicle. Bohon Buggies are made in the heart of the hickory-growing section of America by one of the oldest and largest buggy manufacturers. I know what you want and I absolutely guarantee to satisfy you.

### Get My Big Free Book Today

It's the biggest buggy book ever put out. 208 pages of lower prices, more styles, the strongest, most liberal guarantee ever written. This book also covers every kind of harness. We are largest buggy and harness manufacturers selling direct to the consumer. My Money-Saving Merchandise and Farm Equipment catalog should be in your hands also. Write—get these books today. Save money and time.

### My \$30,000.00 Bond Protects You

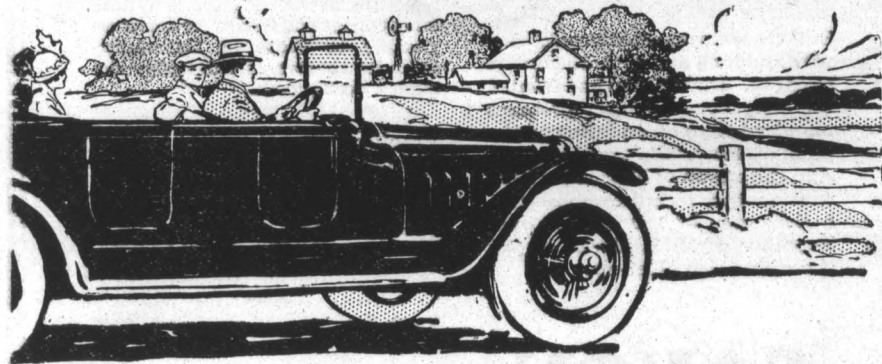
And backs everything I say. I have aimed to give you the biggest and best buggy proposition ever put on the market. I will save you \$25 to \$50 on your buggy this year. But write me now for the Free Books. Tell me to send the Money-Saving Merchandise Book if you want it. I will save you money on farm tools, farm equipment, etc. Finest quality—quick shipments. D. T. Bohon, Pres.

THE D. T. BOHON CO.  
33 Main St. Harrodsburg, Kentucky



## BOHON'S BUGGIES

From Factory to YOU — Save YOU Money



## Use Polarine

and Your Car Will Give the Maximum of Service for a Minimum Cost

Polarine adds power and life to your motor—makes hill climbing easy—insures freedom from carbon in the cylinders.

Polarine pays for itself many times by increasing the re-sale value of your car and by minimizing repairs. It reduces friction to a minimum.

The Standard Oil Company recommends Polarine for use in any type or make of standardized automobile engine in zero or summer weather.

Polarine maintains the correct lubricating body at any motor speed or temperature.

Order a half barrel today. It costs less that way than in smaller quantities.

Standard Oil Company (Indiana) Chicago, U.S.A.

Use Red Crown Gasoline and get more power, more speed, more miles per gallon

## Agricultural Lime

Northern Hydrated Lime and Pulverized Limestone, also pulverized burned lime, all made from high calcium limestone. Guaranteed to be the best on the market. Your inquiries solicited. Samples furnished on request.

Northern Lime Co., Petoskey, Mich.

## LIME

—You should get the highest grade of limestone manufactured. Buy it upon the basis of analysis. We manufacture the highest grade pulverized limestone sold in Michigan. Let us prove it. Ask for sample and analysis.

CAMPBELL STONE CO., Indian River, Mich.

## LIME

Pulverized lime rock for "sour" soils. Write for LOW PRICES DIRECT TO YOU and we will send sample and full particulars. Write to office nearest you.

LAKE SHORE STONE COMPANY, Muskegon, Mich., and Benton Harbor, Mich.

# LIME

Your Land With



Ground lump lime, hydrated lime and ground limestone (absolutely dry).

24-Page Book Free

Send your name for lime book, soil testing materials and name of your local Tiger Brand agent.

The Kelley Island Lime & Transport Co.

911 Leader News Bldg., Cleveland, Ohio

straight. Don't sling your club as if you was ropin' a steer. Come round easy like an' hit straight."

Ed made several attempts, which, although better than those of his predecessors, were rather discouraging to the exacting coach. Presently, after a particularly atrocious shot, Stillwell strode in distress here and there, and finally stopped a dozen paces or more in front of the teeing-ground. Ed calmly made ready for another attempt.

"Fore!" he called.

Stillwell stared.

"Fore!" yelled Ed.

"Why're you hollerin' that way at me?" demanded Bill.

"I mean for you to lope off the horizon. Get back from in front."

"Oh, that's one of them crazy words Monty is always hollerin'." Wal, I reckon I'm safe enough hyar. You couldn't hit me in a million years."

"Bill, ooze away," urged Ed.

"Didn't I say you couldn't hit me? What am I coachin' you for? It's because you hit crooked, ain't it? Wal, go ahead an' break your back."

Ed Linton was a short, heavy man, and his stocky build gave evidence of strength. His former strokes had not been made with much exertion, but now he got ready for a supreme effort. A sudden silence camped down upon the exuberant cowboys. It was one of those fateful moments when the air was charged with disaster. As Ed swung the club it fairly whistled.

Crack! Instantly came a thump; but no one saw the ball until it dropped from Stillwell's shrinking body. His big hands went spasmodically to the place that hurt and a terrible groan rumbled from him.

Then the cowboys broke into a frenzy of mirth that seemed to find adequate expression only in a dancing and rolling accompaniment to their howls. Stillwell recovered his dignity as soon as he caught his breath, and he advanced with a rueful face.

"Wal, boys, it's on Bill," he said. "I'm a livin' proof of the pig-headedness of mankind. Ed, you win. You're captain of the team. You hit straight, an' if I hadn't been obstructin' the general atmosphere that ball would sure have gone clear to the Chiricahuas!" Then making a megaphone of his huge hands, Stillwell yelled a blast of defiance at Monty and Link.

"Hey, you swell gol-lofers! We're waitin'. Come on if you ain't scared."

Instantly Monty and Link quit practicing and, like two emperors, came stalking across the links.

"Guess my bluff didn't work much," said Stillwell. Then he turned to Madeline and her friends. "Sure I hope, Miss Majesty, that you-all won't weaken an' go over to the enemy. Monty is some eloquent, an' has a way of gettin' people to agree with him. He'll be plumb wild when he heahs what he an' Link are up against; but it's a square deal, because he wouldn't help us or lend the book that shows how to play. An' besides, it's policy for us to beat him. Now if you'll elect who's to be caddies an' umpire I'll be powerful obliged."

Madeline's friends were hugely amused over the prospective match, but, except for Dorothy and Castleton, they disclaimed any ambition for active participation. Accordingly Madeline appointed Castleton to judge the play, Dorothy to act as caddie for Ed Linton, and she herself decided to be caddie for Ambrose. While Stillwell beamingly announced this momentous news to his team and supporters, Monty and Link were striding up.

Both were diminutive in size, bow-legged, lame in one foot, and altogether unprepossessing. Link was young. Monty's years, more than twice Link's, had left their mark; but it would have been impossible to tell the veteran cowboy's age. As Stillwell said, Monty was burned to the color and hardness of a cinder. He never noticed the heat, and always wore heavy sheepskin chaps with the wool outside. This

made him look broader than he was long.

Link, always partial to leather, had, since becoming Madeline's chauffeur, taken to leather altogether. He carried no weapon, but Monty wore a huge gun-sheath and gun. Link smoked a cigarette and looked coolly impudent. Monty was dark-faced, swaggering, for all the world like a barbarian chief.

"That Monty makes my flesh creep," said Helen, low-voiced. "Really, Mr. Stillwell, is he so bad—desperate—as I've heard? Did he ever kill anybody?"

"Sure—most as many as Nels," replied Stillwell cheerfully.

"Oh! And is that nice Mr. Nels a desperado, too? I would never have thought so. He's so kind and old-fashioned and soft-voiced."

"Nels is sure an example of the duplicity of men, Miss Helen. Don't you listen to his soft voice. He's really as bad as a side-winder rattlesnake."

At this juncture Monty and Link reached the teeing-ground, and Stillwell went out to meet them. The other cowboys pressed forward to surround the trio. Madeline heard Stillwell's voice, and evidently he was explaining that his team was to have skilled advice during the play.

Suddenly there came from the center of the group a loud, angry roar that broke off as suddenly. Then followed excited voices all mingled together. Presently Monty appeared, breaking away from restraining hands, and he strode toward Madeline.

Monty Price had never been known to speak to a woman unless he was first addressed, and then he answered in blunt, awkward shyness. Upon this great occasion, however, it appeared that he meant to plead with Madeline, for he showed stress of emotion. Madeline had never become acquainted with Monty. She was a little in awe, if not in fear of him, and now she found it imperative to keep in mind that more than any other of the wild fellows on her ranch this one should be dealt with as if he were a big boy.

Monty removed his sombrero—something he had never done before—showing that his head was entirely bald. This was one of the marks of that terrible Montana prairie-fire through which he had fought to save the life of a child. Madeline did not forget it, and all at once she wanted to take Monty's side. Remembering Stillwell's wisdom, however, she forbore yielding to sentiment and called upon her wits. "Miss—Miss Hammond," began Monty, stammering. "I'm extendin' admirin' greetin's to you an' your friends. Link an' me are right down proud to play the match game with you watchin'. But Bill says you're goin' to caddie for his team an' coach 'em on the fine points. An' I want to ask, all respectful, if thet's fair an' square?"

"Monty, that is for you to say," replied Madeline. "It was my suggestion; but if you object in the least, of course we shall withdraw. It seems fair to me, because you have learned the game, you are expert, and I understand the other boys have no chance with you. Then you have coached Link. I think it would be sportsmanlike of you to accept the handicap."

"Aw, a handicap! Thet was what Bill was drivin' at! Why didn't he say so? Every time Bill comes to a word thet's pie to us old golfers, he jest stumbles. Miss Majesty, you've made it all as clear as pirnt; an' I may say with becomin' modesty thet you wasn't mistakin' none about me bein' sportsmanlike. Me an' Link was born thet way. We accept the handicap. Lackin' thet handicap, I reckon Link an' me would have no ambish to play our most beootiful game. An' thankin' you, Miss Majesty, an' all your friends, I want to add thet if Bill's outfit couldn't beat us before, they've got a swell chanst now, with you ladies a watchin' me an' Link!"

Monty seemed to expand with pride as he delivered this speech. At the end he bowed low and turned away to



join the group round Stillwell. Once more there arose animated discussion and argument and expostulation. One of the cowboys came for Castleton and led him away to discuss the ground rules.

It seemed to Madeline that the game never would begin. She strolled on the rim of the mesa, arm in arm with Edith Wayne, and while Edith talked she looked out over the gray valley leading to the rugged black mountains and the vast red wastes. In the foreground, on the gray slope, she saw cattle in movement and cowboys riding to and fro. She thought of Stewart.

Then Boyd Harvey came for her, saying that all the preliminary details had been arranged. Stillwell met them half way, and this cool, dry old cattleman, whose face and manner would scarcely change at the announcement of a cattle raid, now showed extreme agitation.

(Continued next week).

#### LIGHTING THE FARM HOME.

The matter of lighting the farm home with improved lights is one that is worthy of attention in every home not now provided with them. In the past we have had but little choice. The common kerosene lamp was the only thing at hand. The light was poor, whatever style of lamp we had, and the only choice was in the ornamentation. In these days of practical methods the demand is for light and not merely for ornamental fixtures.

There are a number of excellent lights on the market now, and all of them have marked superiority over the old style lamps. There are comparatively inexpensive lamps that give excellent results, as far as the quality of the light goes, and there are small electric lighting plants and gas plants for the farm home that are efficient.

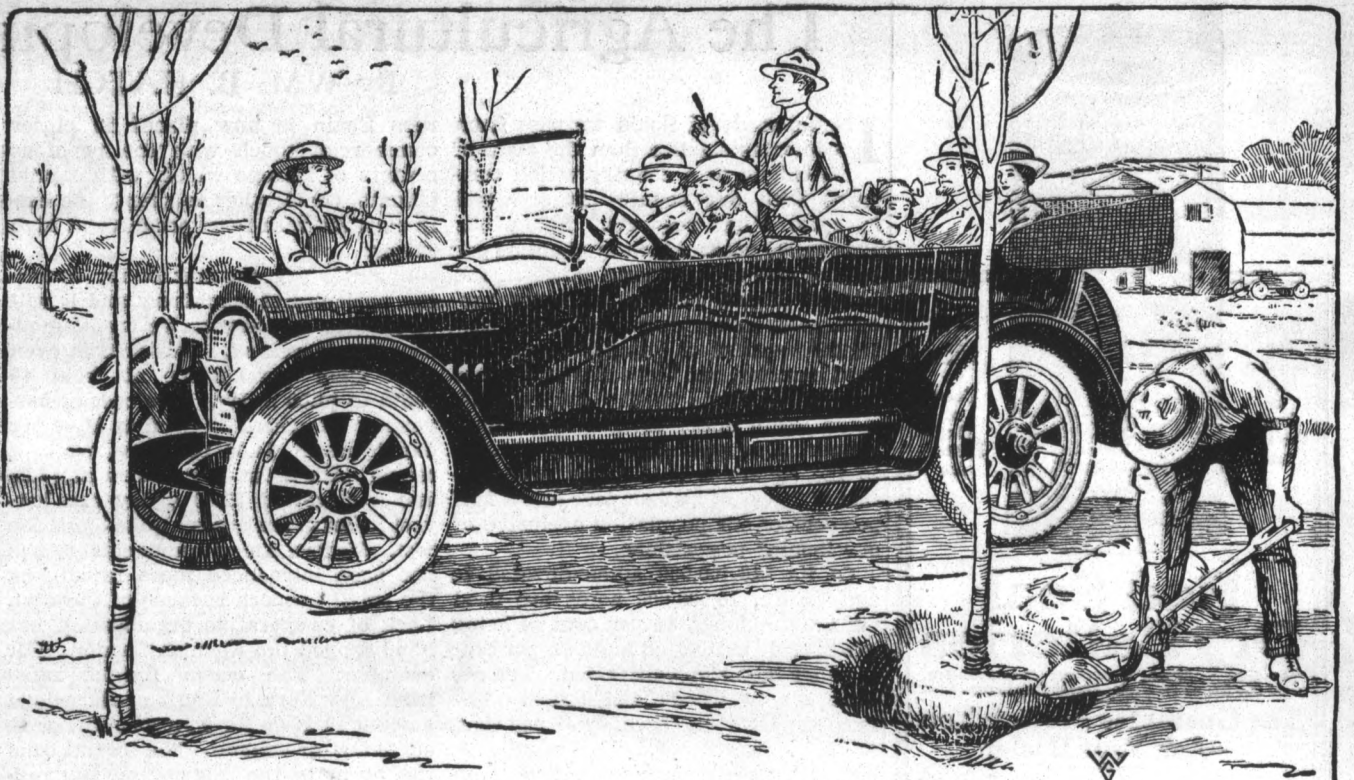
A small electric lighting plant can now be installed at moderate cost. The current can be used for running motors, and the engine for running the dynamo can also be used for running other machinery if desired. Altogether, electricity is an admirable agent for lighting the farm buildings where the expense is not burdensome and where a number of lights are needed at the same time.

Acetylene gas is making considerable progress for lighting farm homes. One advantage in this system of lighting is that the gas may be used to run a range the same as city gas.

There are various forms of lamps that make use of incandescent mantles that furnish an excellent quality of white light. They are operated by means of gasoline or kerosene. Either one is equally efficient. However, I am personally opposed to having so inflammable a substance as gasoline about the house, especially where there are children. The perfection of incandescent mantles, and of lamps for burning kerosene and producing the desirable white light by use of them is a great step forward for lighting the farm home. These improved mantle lamps are very economical in the use of oil, so that installing them is a matter of economy as well as of convenience.

Oculists and physicians assert that much of the increasing eye troubles and chronic headache is due almost entirely to poor lights and the consequent eye strain. Good lights in the farm home greatly facilitate doing the housework, and they make reading and study a pleasure where often it is now drudgery. I believe that good lights will do much toward solving the problem of keeping the young folks at home nights and on the farm instead of going to the cities than any other one thing. A dark, dingy farm home, where all the members have to huddle up around the lamp every night is not conducive to contentment after the children have once had experience with the bright lights that are provided in most town places.

Wisconsin. R. E. DUMICK.



## KING EIGHT CYLINDER

Every dollar planted in this big powerful Eight will return many miles of matchless riding satisfaction

Here is a printed "demonstration" which the local King dealer can make a fact

#### FLEXIBILITY—INSTANT "GET-AWAY"

With seven passengers can be throttled down on "high" to two miles per hour. At this "creep" one can walk alongside, raise hood and examine engine. Small bore long stroke cylinders with extra large valve ratio, combined with a perfectly balanced crankshaft and fly-wheel, explain this extraordinary performance. A touch upon the accelerator and the car is away at a racing speed.

#### ACCELERATION—HIGH SPEED

From two to sixty miles an hour without gear changing, vibration, or noise. We believe the King gathers speed with greater rapidity than any other car on the market and all accelerometer tests support this opinion. Eight cylinders, aluminum pistons and large valves help make this possible. Engine gives nearly 3000 R.P.M.

#### HILL CLIMBING ON "HIGH"

An unperfected experimental car of this model ascended the famous three-mile twisting hill of Uniontown, Pa., on "high" with

six passengers, average weight 176 lbs. Slowed down to 5 miles per hour and accelerated to 35 on steepest part of grade. With two passengers made these three miles in four minutes and forty-one seconds with full touring equipment. Starting from Denver in "high" climbed Lookout Mountain and Genesee Peak, Colorado, without once shifting gears or slipping clutch.

#### EASE OF OPERATION—COMFORT

The ideal car for women who drive because of little gear shifting—and that little made easy. Steers without effort. Long Cantilever springs of King design give all-day trips an "easy-chair" comfort.

#### ECONOMY—LONGEVITY

The constant flow of power given by the high-speed eight cylinder King engine permits the use of light reciprocating parts which reduce friction and vibration to a minimum. This results in a most remarkable economy of fuel, oil, tires and repairs and spells a long, efficient life for the car.

"Challenger" Model E, 60 H.-P., Seven-passenger, \$1350

Roadster, \$1350 - - - Sedan "All-weather" Car, \$1900 - - - Send for catalog and name of nearest dealer

KING MOTOR CAR COMPANY :: DETROIT

### 1 Year to pay for your Rawleigh

#### Sixty days FREE trial

You can buy a Rawleigh Engine on 60 days free trial, and if not absolutely satisfactory in EVERY respect, we will take it back and refund every cent you have paid for engine or freight. There's no better engine sold AT ANY PRICE.

**The Rawleigh**

#### READ THESE PRICES

1 1/2 H.P.	\$25.70
2 1/2 H.P.	38.90
3 1/2 H.P.	49.80
4 1/2 H.P.	69.90
7 H.P.	96.85
9 H.P.	139.65

Complete, f. o. b., Freeport, Illinois. Cash, or 60 day bank deposit.

RAWLEIGH MANUFACTURING CO., 413 Taylor Ave., Freeport, Ill.

#### And send at once for NEW catalog

EVERY Rawleigh engine is tested on brake to pull 15% more than its rated horsepower continuously. Use gasoline, kerosene, distillate, or gas. 4-cycle—Make and break ignition—Contact points can be cleaned while running—Cylinders cast separately—(Hopper cooled—Semi-Steel)—Piston ground to size—Malleable connecting rod—Drop forged crank, ground to mirror finish. Buy DIRECT from a manufacturer of KNOWN responsibility at lower prices than you can buy elsewhere.



W. T. RAWLEIGH,  
President Rawleigh  
Manufacturing Co.

### Make Your Own Drain Tile

#### THE FARMERS' CEMENT TILE MACHINE

Makes tile 3 to 8 inches in diam., 12 1/2 inches long. One man or boy operates it by hand or power. 500 tile per day by hand, 1,200 by power. Tile thoroughly cured by patent process. No tamping or use of pallets. This machine and tile used by Experiment Stations of Agricultural Colleges and the U. S. Dept. of Agriculture. 5,000 farmers have doubled the yield of land by underdrainage, and saved 75% of cost by using our Machine. You can do the same. Save cost of hauling and breaking. Make perfect tile \$3 to \$5 per thousand. MACHINE SOLD DIRECT FROM FACTORY TO YOU. TEN DAYS' FREE TRIAL. SEND NOW for 36-page Illustrated Catalogue. Tells you about great benefits of underdrainage, how to take levels and get grades, make and lay your tile at low cost.

FARMERS' CEMENT TILE MACHINE CO.,

Box 307, ST. JOHNS, MICH.

#### Strawberry Plants

All standard varieties at \$1.50 to \$2.50 per 1000. EVER BEARING at \$1.50 per 100. POSTPAID Asparagus at \$2.50 per 1000. Grapes, raspberries, etc. Catalogue free. Large stock. Try us.

THE ALLEGAN PLANT CO. Allegan, Mich.

#### STRAWBERRY AND SMALL FRUIT PLANTS

Reliable Northern Grown Plants, Ornamental Shrubs and Gladioli. We grow, sell direct, guarantee to please. Write for free illustrated Plant Book. Address R. J. Stahelin, the St. Joseph Nursery, Box 461, St. Joseph, Michigan.

#### STRAWBERRIES All Varieties Catalog Free

Rokely's famous Michigan plants. Only hardy well rooted stock. All varieties—Strawberry, Raspberry, Blackberry, Currant, etc., including the EVER BEARING STRAWBERRY. Write today sure for free catalog. J. N. ROKELY, BOX 86, BRIDGMAN, MICH.

#### Strawberry Plants

\$1.50 per 1000, etc. Best Michigan Stock, 100 varieties including Everbearing, also Grapes, Raspberries and other small fruits. Send today for FREE Catalog. ALLEGAN NURSERY, BOX 20, ALLEGAN, MICH.

#### WHOLESALE PRICES

To the planter of Strawberry and Raspberry plants. Other kinds at low prices. Catalogue free. A. A. WESTON & CO., BRIDGMAN, MICH.

### AGENTS WANTED

to represent a reliable concern canvassing among farmers in your own neighborhood or elsewhere. No experience necessary. Liberal pay, and supplies furnished free to right parties. Reference required. Address, ADVERTISER, CARE THE MICHIGAN FARMER, Detroit, Michigan



# The Agricultural Development of Spain

By WM. B. HATCH

IN the study of Spain we pass from countries smaller than the state of Michigan to a country which compares with our country in area and in some other respects. Spain has 126,000,000 acres which is about 14 per cent of the area of farm lands in the United States. Spain, although pre-eminently an agriculture country, having 90 per cent of its area devoted to that industry, yet there are at present only 100 persons to the square mile, while Spain under the Roman Empire supported a population of 166 persons to the square mile. It has a population of 20,000,000, about four and a half per cent of our population exclusive of our insular possessions.

Of its 113,400,000 acres devoted to agriculture, 16,000,000 acres are used for grain raising, 31 per cent is being extensively cultivated and two per cent is under intensive cultivation. Ten per cent are in woods and brush. The largest part of the area, or 41 per cent, is in pasture lands. The country is dry, hot and sunshiny with little afforestation and much of the limited rainfall is lost through floods. Erosion is a serious problem.

The greater part of Spain lies on a plateau between 2,000 and 3,000 feet

ities Spain is now placed in closer commercial touch with the populous centers of Europe which, with a mild climate, enables her to supply the early markets with farm products at high prices.

Spain is a great market for American agricultural machinery and it will be greater as co-operative credit facilities are increased. This is true even with labor purchasable at from 40 cents to \$1.00 a day. The cost of harvesting the wheat by hand at \$1.00 per day is about \$4.00 per acre, while a reaper with a two-horse team at \$3.00 and a driver at \$1.00 a day can harvest at least ten acres at one-tenth the cost. Modern American machinery has not been introduced more rapidly by the small farmers because of the cost. Lack of co-operative organization has handicapped the Spanish farmer. For example: The ocean freight rates from New York to Kadiz or Barcelona amount to \$6.00 for 2,240 pounds, or 40 cubic feet of volume. The freight from the ports to the interior on the railroads is much higher, amounting to \$15 per long ton to Madrid. The import duty is \$18 per long ton on agriculture machinery, which is "knocked down and crated" but this is rebated to the

under irrigation, proper cultivation, etc. Under these improved conditions the selling price of the land is increased from \$300 to \$1,000 an acre.

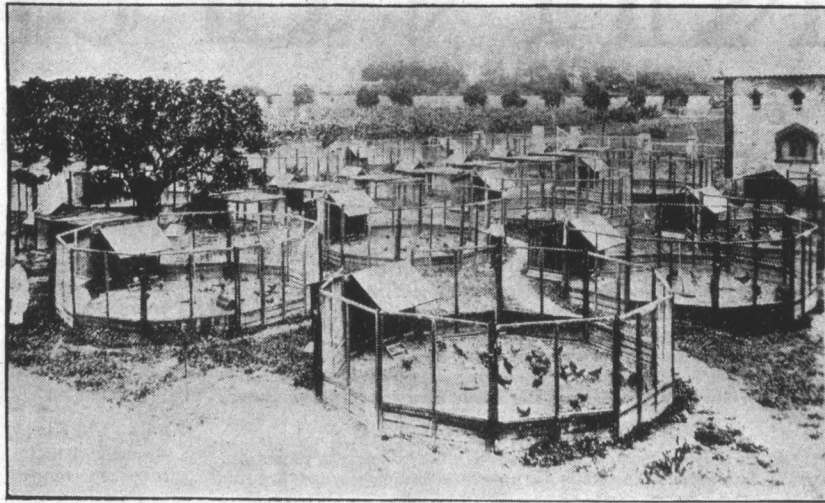
The interesting feature for us in the United States of the agricultural credit system in Spain is the careful study which the Spanish government has made at close range of the systems of agricultural credit in the other European countries and the systematic way in which it has gone about investigating its own requirements. It was found that the credit and banking facilities were fairly good for the large landed proprietors but illy adapted to the needs of the smaller farmer. There had been organized in Spain at the time of the visit of the committee, over 6,530 local institutions recognized by the state under the law of sindicatos which furnished agricultural credit to the farmer. Capital is limited in amount and devoted mainly to short time individual loans for productive purposes. It was found, however, that only about one out of eight of the farms could be accommodated from these sources. Long time credit is encouraged to some extent by the land mortgage bank of Spain and the bank of Spain, but the exactions by these banks have been so severe that they have afforded little relief to the average small farmer.

In the domain of co-operative production there are some 500,000 farmers in Spain associated together through 2,500 co-operative societies coming under the general title "Sindicatos Agrícolas." Nearly 1,000 of these have been formed since the law of 1908 exempting them from taxation and extending their privileges; 83 farmers associations and 100 chambers of agriculture are included in the 2,500. In 1908 there were 856 sindicatos and within the next year 300 more were formed. Eight of these are associations for putting in irrigation works but the majority of them were established by the farmers for the purpose of purchasing seeds, machinery, fertilizers, live stock, etc., for the improvement in production. Their success has been pronounced.

Under the influence of the co-operative movement production has been increased in quality as well as quantity; conservation of the natural resources, such as the fertility of the soil and the forests, has been encouraged. The more suitable kinds of cultivation have been introduced, the region of intensive cultivation has been extended; the stock raising industry is being transformed through the development of forage and other crops instead of depending upon grazing and the industry has been made safer through the introduction of animal insurance and rural police. The cattle raisers' association is carrying on a campaign of education among all its members, teaching them the requirements of the market and how they should raise their stock to meet these requirements. It also instructs them in the introduction of more suitable kinds of stock and helps them to improve the breed.

The department of agriculture has traveling professorships in the several provinces and experimental farms on which the modern methods of scientific farming are being demonstrated and they also make separate demonstrations on the farms of the various sections of the country. The experimental department is combating plant diseases. A remedy has been found for almost every disease which has yet appeared, including phyloxera which threatened the grape vine, in Spain and other European countries. Co-operation has been the most influential factor in enabling this program to be carried out.

Centuries ago the old Gothic produce exchange of Valencia, was fre-



Where the Spaniards are Taught Better Methods of Poultry Husbandry.

above sea level. In spite of this, however, some 60 or 70 per cent of the population is engaged in agriculture. In 1910 they raised 7,433,620 tons of wheat, barley, oats, rye, maize and rice on 25,620 square miles. Beans, peas, lentils, onions, garlic, nuts, olives, oranges, raisins, grapes, lemons, beet sugar are among the more conspicuous agriculture products.

This plateau country has awakened to the importance of co-operative agriculture to promote irrigation projects and dry farming methods. The immediate vicinity of the rivers was irrigated by the Romans and the Moors centuries ago. However, only about three per cent of the farm lands have been brought under irrigation in a period of 2,000 years. This is chiefly because of the cost and the lack of funds available. There is also great need for the use of modern, up-to-date farming machinery to do farming on a large scale.

The size of the farms in Spain average much larger than they do in the United States. Our farms are mostly between 75 and 250 acres in area with only a few comparatively under 10 acres or over 500 acres, whereas those in Spain are mostly very large or very small, a large part of the area being holdings of 500 to 35,000 acres, owned by absentee proprietors and much of the remainder in small holdings under ten acres in area worked by their owners. The large holdings are mostly worked on the share system, by tenants under the supervision of a local agent of the proprietor, although the tendency is toward the dividing up of the large estates as provided under the law abolishing primogeniture.

By reason of improved railroad facil-

agricultural societies (sindicatos). A mowing machine, knocked down and crated, costs \$38 at retail in the United States so the wholesale price for export should be much lower. The ocean freight is \$2.00 each, transportation to the interior is \$5.00 and cartage and assembling \$2.00 each which, with commission to the sindicato of \$3.00 brings the price up to \$50 to the farmer. This is what they ought to pay and the price French farmers of the interior do pay. But the Spaniards and Italians pay \$80 and \$70 respectively per machine.

El Sindicato Nacional de Maquinaria Agrícola, a private manufacturing company in Spain makes plows, threshing machines, etc., but imports mowers, reapers, etc. Its prices are \$80 for mowers, \$150 for reapers (which retail at \$55 in America and should sell for \$80); grain drills, six feet wide, at \$130; disc harrows, five feet wide, at \$80; one-horse cultivators, at \$45; two-horse cultivators, for re-plowing, \$75; one-horse, five-point grain drills, \$40; fertilizer distributors, ten feet wide, at \$150; onehandle two-horse plows, at \$12, and spring-toothed harrows at \$30.

While we have two and one-half times as many cattle and large stock as Spain, we only have three-fourths as many small animals in proportion to area. The breeding of fighting bulls in Spain is as important as that of race horses in America and England. The finest jackasses in the world are produced by Spain.

The same kind of land which is valued at \$40 an acre under the old method of dry farming, and which produces 15 bushels of wheat to the acre every second or third year, thus averaging about six bushels to the year, can be made to produce eight times as much



Send for Book—How to Run the Gas Engine

Book is FREE to Users of Dry Batteries

## Red Seal Dry Batteries

For Gas Engines, Tractors, Automobiles, also for Phones, Bells, Hand Lanterns, Etc.

The Guarantee Protects You—Ask Your Dealer

Complimentary to Users of Dry Batteries Send dealer's name and we will forward you, free and postpaid, book—"How to Run the Gas Engine—Simplified" adopted as text book by 12 State Agricultural Colleges. Also our catalog of Everything Electrical for Home and On the Farm.

MANHATTAN ELECTRICAL SUPPLY CO.

104 So. Fifth Ave., Chicago  
New York St. Louis San Francisco  
Factories at Jersey City, N. J., and Ravenna, Ohio



### Comfort—

is a conspicuous feature of the new Jackson "34." It begins with the swift, even impulses of the high-duty balanced motor; it is emphasized by the four full elliptic springs which permit the Jackson to take rough roads in comfort, the deep luxurious upholstery, the roomy body and the wonderful completeness of equipment.

Model "34" Four, \$ 985  
Model "34S" Eight, 1195  
Model "68" Eight, 1685

Jackson Automobile Co.,  
Jackson, Mich.



## FOR HOMES, BARNS and IMPLEMENTS

DIRECT FROM FACTORY TO YOU. HIGH GRADE WHOLESALE PRICES SHIPMENTS MADE SAME DAY ORDER IS RECEIVED. A TRIAL WILL PLEASE YOU SEND FOR CIRCULAR AND COLOR CARD.

PONTIAC PAINT MFG. CO.  
PONTIAC, MICH.

P  
A  
I  
N  
T

### DOGS

## COLLIE DOGS

The Best on Earth at Reasonable Prices.  
E. A. ROGERS, Dundee, Michigan.

HOUNDS FOR HUNTING—Fox, Coon and Rabbits, all ages. Send 2 cent stamp.  
W. E. LECKY, Holmesville, Ohio

For Sale: Write W. A. Ewalt, Mt. Clemens, Mich. for those pure bred, Sable and white Scotch Collie Puppies natural heelers from trained stock.

When writing advertisers mention Michigan Farmer



quented by the Venetians and other great traders of the Mediterranean, and Cadiz, on the Atlantic, was the great distributing port for the whole world. Recently Barcelona has come to the front, being at present the most important shipping center of Southern Europe, having nearly a million inhabitants. From this port, modern railroad trains carry citrus fruits and vegetables for the earliest markets in continental Europe.

Probably the largest and most influential of the farmers' organizations of Spain is The National Association of Cattle Raisers. This association has over 38,000 members, distributed over the whole of Spain. It has undertaken co-operative buying and marketing. At the present time its scope covers the co-operative purchase of all the raw material used by its members, the improving of live stock for breeding purposes, cattle insurance, rural credit societies, co-operative sale of cattle, co-operative cheese factories and butter-making plants, wool washing and the publication of monthly bulletins, showing the state of the market and the condition of production, annual reports, special instruction to the members concerning market prices and requirements, and the methods of production to best fulfill these requirements, cow-testing associations, live stock breeders' associations, regional and central stock expeditions or fairs and a general propaganda work. Many prominent government officials being members, this association has been able to get laws enacted and executed for the improvement of the cattle industry, and also to reduce the cost of beef to the general public.

#### Meat Supply of Madrid.

The consumers buy directly from the meat markets, either in the several public markets, or in shops throughout the city, paying 40 cents a pound for the best cuts of beef, 25 cents for round and rib roasts, and 14 and 18 cents for neck and hock cuts. The dealers buy in halves and quarters, at an average price of 15½ cents a pound from auction jobbers, who purchase directly from the producers' association and pay all the fees to the municipality. They receive for their profits all the parts, except the dressed beef, such as the hide, horns, hoofs and heads, etc. The producers receive about the same price that these auction jobbers get, namely, 15½ cents a pound for dressed beef on the average. The producers have to pay a killing fee to the municipality, whose employees do the slaughtering at the rate of 80 cents per head for beef cattle and eight cents for sheep and hogs. They also pay the freight charges from the ship-point and two per cent plus the cost of delivery to the abattoirs as a fee to the association.

The people in the country districts of Spain live mostly in villages, partly because of the traditional custom of grouping together for mutual protection and defence and also for the reason that a large part of the open country in Spain is very dry, dusty, and lacking in vegetation throughout a large part of the year. The tenure of land has something to do with it, too, for there has been little inducement to build separate houses on the larger estates.

The rural life in those portions of the country where vegetation is lacking, seems to be miserable and monotonous, and the people appear to reflect their miserable existence. They look dried up, half starved and overworked. The country people in the pleasanter regions, are strong, handsome and robust, as well as good natured and full of fun. All but the very highest type of people are interested, above everything else, in bull fighting.

The Social Reform Institute succeeding the Social Reform Commission was organized to act as an arbitrator between capital and labor, to study the whole problem, and to make recommendations as to the means for bettering these unfortunate rural condi-

tions. This Institute has proved a most valuable institution for encouraging improvement in social conditions. Nearly all the recent laws passed by the Cortes for the betterment of agriculture, have been formulated and recommended by the Institute. The state, the Provinces and the Communes are authorized by law to grant, free of charge, such land as may be necessary for workmen's houses, and these houses are exempt from taxation, as well as the concerns engaged in building them, and the government grants 500,000 pesetas annually towards this work.

#### Public Road Improvement.

National highways are built and maintained by the state, provincial highways at the expense of the Province in which they are situated, and district highways are built and paid for by the townships, which may borrow from 40 to 70 per cent of the cost of construction at five per cent interest from the Federal government, which appropriates a certain limited amount annually for this purpose. These loans are amortizable in thirty years by annuities. The estimates for road construction for the year of the visit of our commissioners was \$1,980,000 for district roads, of which \$720,000 is supplied by the Federal government besides \$474,000 for building new national roads. The estimated cost of new construction is \$6,100 per mile and maintenance \$144 per mile. Provincial and state roads must have a twenty-foot roadway from shoulder to shoulder, with gutters two feet eight inches by 12 inches, with a macadam surface 15 feet wide, and tapering from eight inches thick at the center to four inches thick at the side.

By Royal Decree of July, 1907, there has been established an Institution of Mutuality and Providence or thrift in public schools of Spain. The children are taught to begin to make provisions for the future in the following way: (a) saving's bank accounts drawing compound interest; (b) insurance of dowry for girls; (c) old age pensions for all; (d) vacation colonies and health insurance, etc., for all. This institution has worked well in Italy and is being taken up with enthusiasm by the Spanish teachers and the rural population.

#### Local Markets.

There being few cities with a large population the system of a central market place and regular market days for bringing in the produce from the surrounding countries generally prevails. The price of labor being low and women and children generally taking care of the sales of produce in the markets, the cost is kept down pretty low. Usually women pack the farm produce on donkeys or load it in carts and bring it into the market and sell it themselves, while their husbands remain laboring in the fields. Sunday is the day for selling live stock, and in the small villages this is made a sort of holiday occasion, like a country fair.

The whole nation is united in the belief that co-operation in all its phases should be encouraged. It is recognized that this is a matter which will not make the most rapid progress by being left by itself. The government, through the Department of Agriculture and more particularly through the Bureau of Social Reforms, is making a continued effort to guide the progress of co-operation and to stimulate the formation of co-operative societies. In addition to what has already been suggested in the field of accomplishment it may be added that many small villages are being supplied with electric lights, and factories are being established in the open country for the purpose of manufacturing raw materials at the place where they are produced, such as sugar beet factories and marmalade factories. The people are thus enabled to continue to live in the country and have further means of employment, while the factories get the advantage of the lower and more stable kind of labor.



Write it on the film—  
at the time.

Make every written record more authentic, accurate, by truth telling photographs. Then, in turn, make the photographs more valuable by writing the date and title on the film at the time of exposure. Such a record becomes a permanent part of the negative, at no extra cost for film and the making of it is only a matter of a few seconds with an

**Autographic Kodak**

Ask your dealer to show you, or write us for a free catalogue.

EASTMAN KODAK CO., 389 State St., ROCHESTER, N. Y.

## Boston Garter



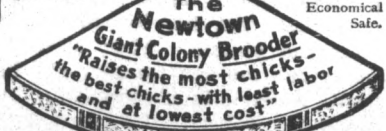
THE "Boston" gives the greatest service because of its superior materials and careful making. It does not crumple or collapse after long wear.

LISLE  
25 Cents  
SILK  
50 Cents

SOLD EVERYWHERE  
GEORGE FROST CO.  
MAKERS, BOSTON

## You Can Raise Chicks

big flocks of sturdy profit-payers—if you use the wonderful **Newtown**. The brooder of *proven efficiency*. Don't risk disappointment and loss by using untried imitations. Get the **Newtown**—"the brooder that has made good" for years in the hands of the most successful chick growers.



Self-Regulating  
Self-Feeding  
Coal-Burning  
Economical  
Safe.

**Newtown Giant Incubator Corp'n**  
90 Warsaw St., Harrisonburg, Va.

**130 Egg Incubator \$10**  
and Brooder Both for \$10  
If Ordered Together. Freight paid  
east of Rockies. Hot water  
copper tanks, double walls,  
dead air space, double glass  
doors, all set up complete, or  
100 Egg Incubator and Brooder \$12.00.  
FREE Catalogue describing them. Send  
for it TODAY or order direct.  
—Wisconsin Incubator Co., Box 106 Racine, Wis.—

## DePUY'S SEEDS

Are First Aid  
to Good Crops

Here are four choice productions that should be planted in every garden:

**CRIMSON BEAUTY TOMATO**, - pkt. 25c  
The Best Early Tomato in Existence  
**ROBINSON'S GOLD LINED MUSK**  
**MELON**, - pkt. 5c  
The Most Delicious Melon Grown  
**SPANISH JUMBO PEPPER**, - pkt. 15c  
The Finest Large Pepper Yet Produced  
**WONDERFUL LETTUCE**, - pkt. 5c  
The Largest and Finest Head Lettuce  
Ever Offered. Total Value, - 50c

Send us 25 CENTS and we will mail you the above assortment and our illustrated Catalog **FREE**.

Do It Now! This offer will not appear again.

The C. E. DePuy Co., Pontiac, Mich.

## WEAR YOUR OWN WOOL

Spun and woven by the old homespun methods, just as the Pilgrim Mothers did it for the Pilgrim Fathers. We will make you pure wool blankets, campers blankets, tweeds, fulled cloth, flannels, wool batting, yarn, and hosiery, if you will send us your wool. Write today for price list, and learn how to save money on the best wools.

REED CITY WOOLEN MILLS,  
Established 1883. Reed City, Mich.

## Onion Sets, Onion Seed

We have red, yellow and white sets to offer, and a limited quantity of fine  
**Red Globe Seed**,  
together with a few other varieties. If interested write for prices.

Schilder Brothers, Chillicothe, O.

## Plant Strawberries

We ship plants safely to any part of the United States. Have the VERY BEST for farm or garden CULTURE. Also a complete line of Raspberry, Blackberry, Gooseberry, Currant, Grapes. Acres of Everbearing Strawberry and Raspberry plants, just what you want. Greatest money maker before the American public. Descriptive catalog free. Write now.

Bridgman Nursery Co., Box 95, Bridgman, Mich.

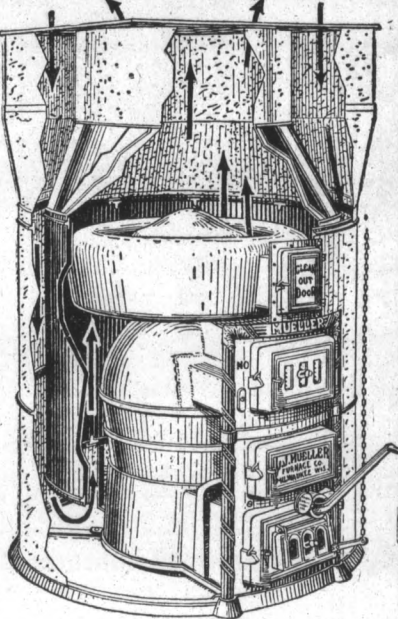
**PEACH AND APPLE TREES** special prices. Send us your list to price Strawberries, Raspberries, Blackberries and Grapes. Catalogue free. Allens Nurseries, Geneva, Ohio.

## Tells why chicks die

E. J. Reefer, the poultry expert, 4384 Reefer Bldg. Kansas City, Mo., is giving away free a valuable book entitled, "White Diarrhoea and How to Cure It." This book contains scientific facts on white diarrhoea and tells how to prepare a simple home solution that cures this terrible disease over night and actually raises 95 per cent of every batch. All poultry raisers should certainly write Mr. Reefer for one of these valuable FREE books.



## Heats Whole House From One Register



WITH the Mueller Pipeless Furnace you can heat every room in your house easily and comfortably from one central register. No flues or pipes to waste space and heat. You don't have to tear up your walls.

**MUELLER  
PIPELESS  
FURNACE**

Cleaner, handier, healthier, safer than stove heating—easy to tend—saves fuel bills. Burns coal, coke or wood. Goes in any cellar, no matter how small. (If you have no cellar, simply dig a small pit to put it in.) Constant circulation of fresh air—abundant ventilation. Doesn't heat cellar and spoil foodstuffs. Built of cast iron for long, hard service.

Write for Free Book showing how the Mueller Pipeless will solve your heating problems.

**L. J. Mueller Furnace Co.** 195 Reed St. Milwaukee, Wis.  
Makers of heating systems of all kinds since 1857. Can supply you with regular hot air pipe furnaces, steam or hot water boilers and vapor heating systems. Give us honest advice on your heating requirements.



**Saves  
1/3  
Your  
Fuel**

—a one-third saving on your fuel bill, year after year, doesn't that make it worth while to find out about this range instead of picking out a range on its "looks?"

It's a perfect baker first and always, and needs no blacking.

**Arcadian  
Malleable  
Charcoal  
Iron Range**

Built like a locomotive boiler. It stays airtight, because it is riveted metal to metal with no stove putty to crumble and let in false drafts, that boost fuel bills, and spoil baking.

Write for inside secrets about ranges—learn how to judge range values and get the most value for your money, FREE. Write today.

**ARCADIAN MALLEABLE RANGE CO.**  
Dept. 16 Milwaukee, Wis.

## To get rid of rats get RID-OF-RATS



Non-Poisonous. Guaranteed to destroy the rat and mouse pest from corner bins, poultry houses, stables, etc. No results, no pay. Box 10c; Doz. boxes \$1 each of Miss.; \$1.20 west of Miss. If your dealer can't supply you order direct. Write for catalog, it tells the story.

Berg & Beards Hg., Co. 13 Steuben St., B'klyn N. Y.

Buy Your **COFFEE** WHOLESALE IN 10-LB LOTS Get the BEST and SAVE 10 cts per pound. WE PAY POST, EXPRESS or FREIGHT IF YOU LOVE GOOD COFFEE SEND FOR PRICE LIST JEVNE COFFEE CO. (Est. 1881) Coffee Specialists Dept. 7, 2855-57 W. Madison St., CHICAGO.



## Woman and Her Needs At Home and Elsewhere

### The Domestic Crucible—24 John Asserts His Independence.

JOHN LUDLOW stood at the farm yard well pumping water for the drove of thirsty cattle and horses which had crowded about the concrete tank for their noonday drink. He pumped briskly, and as he pumped he whistled, whistled clearly and joyously, as though life were good and the world a fine place to live in. And surely the world had treated him well. Thirty head of cattle, 25 of them pure-bred and five "just cattle," as John put it, surrounded the water tank, all sleek, well-fed and well cared for. Besides the cattle there were a half dozen colts, while in the enclosure beyond John sighted 20 porkers all promising a big check come fall. Then Grace had her poultry, 300 choice Plymouth Rocks, not to mention the turkeys she was going to have for Thanksgiving, provided wind and weather and the other terrors of turkeyhood did not overtake them.

Why shouldn't he whistle and be happy? He was young, strong and prosperous, with a prospect of many fat years ahead. But as the cattle still continued to drink and the pump handle, perforce, to work up and down, somehow the immediate happiness began to recede and a flicker of impatience chased the contented look from John's good-natured face. Pumping water for 30 head of stock can hardly be regarded as mirth provoking employment at best, and as the cattle showed no sign of being satisfied, John's strokes became less willing.

Hang it all! This might be all right for boys when dad set them at it. But for an up-to-date farmer with real work to do it seemed like waste time. Why hadn't he an engine to do this work for him, so he could be free for something worth while? There was no windmill, for John had always intended to have an engine. But there had been so many other things to get first. Up-to-date machinery had to be bought, for while his father had helped him get the farm, he had failed to provide any of the accessories. Then came his marriage and that meant building over the house and, of course, a fellow had to take a wedding trip, which meant a couple of hundred dollars more.

Then when Grace came, there were so many things she needed, or thought she did, which with the Ludlows usually amounted to the same thing. There had been screens for the porch, though John and the hired man had got along without even screens at the doors. And she had had to have a sink, and a gasoline stove. That was when he should have put his foot down and bought the engine. Then after the vapor stove for hot weather she had actually buncoed him into putting in a furnace for winter. He grew quite warm thinking about it in the hot June sunshine. The need for furnaces having passed a month ago, the outlay seemed ridiculous. Put in a furnace that could only be used five or six months in the year and go without a gasoline engine that could be used all the year round! He gave the pump handle a vicious yank at the thought. The cattle could choke if they hadn't enough water now. He should pump no more, now or ever, a gasoline engine should do the work hereafter.

John departed to the field still musing on the injustice of wives. Had to have everything in the house for convenience and show, no matter how

much a man had to sweat to provide it for them.

He quite forgot that he had taken as much comfort, and credit, for the furnace while the icy winds of winter howled around, as did Grace, and shut his eyes to the hammock on the cool screened-in porch where he would take his siesta during the dog days. Grace had insisted on those things and he was obliged to pump water for want of an engine. This was the burden of his thoughts. Even now she wasn't satisfied. Only that morning she had been raving about a tapestry davenport that Mary Bullock had just bought, and hinting at how bare their own living-room looked. Well, it could look bare this summer, and John shut his mouth grimly. He was going to have a gasoline engine.

Meanwhile in the house Grace was pondering ways and means to get a davenport a little finer than Mary's with which to dazzle the eyes of the countryside when the Farmers' Club met with her in July. Mary's was all right as far as it went, but it was only mahogany and veneer, and the tapestry upholstery was far from being the best. The Ludlows would have one just a little better, Grace resolved, that is provided John proved reasonable, which he usually did. To make sure of this much to be desired end she carefully planned everything for dinner that he liked best, and even eliminated the fresh salad, which being a woman, she loved, and being a man John contemptuously referred to as "cow fodder." Instead, she made fresh pie and dug up nearly two rows of potatoes in an effort to get enough new ones for dinner.

An air of aloofness which hung about John at dinner warned her, however, that this was not a propitious moment to mention new furniture. Probably something had gone wrong during the morning, so she would put it off till night. It would be better to wait until there was plenty of time for discussion, anyway.

"Mary only paid \$65 for her davenport," she began tentatively at supper. "They were more than that the summer I worked in the store."

"Well, that's just about \$60 more than it's worth, and \$35 less than I'm going to pay for a gasoline engine," John remarked tersely. "I always thought Pete Bullock was a fool; now I know it. He doesn't even have a corn planter that will work, and spends \$65 for a thing to set in the parlor for a lot of women to gabble over!"

"Gasoline engine," gasped Grace, ignoring the scornful allusion to her sex in her dismay at the announcement. "What in the world do you want of a gasoline engine?"

"For the same reason you wanted a vacuum cleaner and stationary tubs," said John, "to save my back, of course. Why should a man pump water by the hour for his stock while his wife has all the labor-saving machinery she can think of in the house? My back is almost broken now," and John arose, placed both hands across his back with a mock groan of misery and hobbled out of doors.

Grace giggled in spite of her irritation. John's imitation of suffering womanhood had been too funny. But gasoline engine when she especially needed that davenport to impress two or three women who thought they knew the latest in house furnish-

ings! It really was too bad of John, but there was no use arguing. Grace knew this was one of the times when John would have his own way. She picked up the last farm paper and turned its pages idly, wondering if she could not find some ideas there to establish her superiority as a hostess without the aid of a davenport. Her eye fell on a glowing advertisement for engines. "Pumps water into the house, runs your washing machine, churns, gives you your own electric lighting plant," she read no farther. Water in the house, electricity, a power washing machine—the very things she had been secretly planning to get, and wondering how best to approach John about. And here he had walked straight into the trap by insisting on the engine himself. How easy men were! Just like wax in a clever woman's hands.

She hummed a gay little song as she cleared the table, and John coming back after the milk pails thought with much satisfaction that all a wife needed to keep her in her place was a judicious amount of masculine firmness.

But his satisfaction would have been somewhat marred had he known that even as Grace was urging him to order his engine that evening, she had already written for price lists of power washers and was planning a look into the cost of country house plumbing.

DEBORAH.

### THE PASS-IT-ALONG CLUB.

BY ELLA E. ROCKWOOD.

It was at one of those friendly neighborhood afternoon gatherings, known as a porch party, where a number of ladies were gathered with their needlework or crochet. Someone suggested that the various members present each give a household hint for the benefit of the others. Agreeing to this, the hostess called upon the ladies in alphabetical order, six to respond at the first meeting and six at the next one, and so on.

Mrs. Allen responded with the following: "I have had so much trouble with my own and my daughters hose dropping stitches and running down the leg that I determined to try a couple of rows of machine stitching around the top just below where the elastic catches. With a short stitch and a loose tension this works fine. It holds the stitches, yet doesn't interfere with the necessary stitching in putting on the stocking."

Mrs. Ames followed with another hose suggestion: "When a stitch breaks and runs I have found machine stitching much better than a needle and thread to repair the damage. I take silk thread the color of the hose and stitch up the length of the break close to the edges, as for any seam. This holds much better than over and over work. But I shall try Mrs. Allen's ounce of prevention hereafter."

Mrs. Brown answered the hostess with a practical dyeing hint. "When a crepe de chene waist has been laundered a number of times, if white, it begins to turn yellow, or, if colored, to fade. By soaking a couple of sheets of colored crepe paper in warm water enough color will be drawn out for a dye. Dip the waist in this until the shade desired is secured, then partially dry and press with a warm iron. Repeat the dyeing as often as necessary."

Mrs. Collins said: "When washing white silk hose or gloves, the pieces will not turn yellow if dried in a dark closet. This applies also to silk waists."

Mrs. Holmes gave a valuable hint to



## Spring Desserts and Salads

In the spring, when there is no fresh fruit, and canned fruit is about all gone, the dainty and delicious desserts and salads made of Jell-O are relished more than at any other time of the year—for they all have fruit flavors, and nothing else "touches the spot" so satisfactorily as the delightfully flavored dishes made of

## JELL-O

There are Strawberry Jell-O, Cherry Jell-O, Raspberry Jell-O, Lemon Jell-O, Orange Jell-O, Peach Jell-O and Chocolate Jell-O—seven different kinds—and any one of them for 10 cents, enough to make a big dessert for six persons.

For Sunday dinner, for everyday dinner, for an afternoon luncheon, or for lunch when friends drop in to see you in the evening, there is nothing so perfectly satisfactory as Jell-O.

Every package of Jell-O contains a folder in which are directions for making up Jell-O in every conceivable form, and these directions are so plain that any housewife can make (at a cost of 10 cents) the same splendid dishes as are made by the great chefs of the grandest hotels in New York and other cities.

The New Jell-O Recipe Book, telling about a young bride's house-keeping experiences, will be sent to you free if you will write and ask us for it.

Remember all grocers and general storekeepers sell Jell-O at 10 cents a package.

THE GENESEE PURE FOOD CO.  
LeRoy, N. Y., and Bridgeburg, Ont.

Be Sure the Name Jell-O in big red letters is on the packages you buy.



mothers of small children. "Stockings wear out at the knees so quickly that it is hard to keep youngsters in hosiery that is not unsightly from repeated mending, even while the feet are perfectly whole. At last I tried cutting them off just above the ankle and turning them front for back, stitching the parts together again on the machine with a loose tension. The seam does not hurt the foot at that point and with high shoes does not show, while the stocking wears just twice as long as before."

The sixth and final hint for the afternoon was from Mrs. Johnson, whose little daughter had been ill with scarlet fever. "The appetite of a child recovering from an illness," she said, "needs a good deal of coaxing. One day Mary took a notion she wanted some oyster soup. It was not the oyster season and, of course, gratifying her was out of the question. But I had a can of salmon in the house and with that to flavor the milk, butter, pepper and salt foundation of the regulation oyster soup I made her a dish which she declared just the thing. We have since tried it for the rest of the family and find it tastes something like oysters. Half a tall can of salmon will make soup for half a dozen people. Simmer first in water, breaking the fish into small pieces, then add milk, butter, pepper and salt. Serve hot with crisp crackers and I am sure your folks will call it good."

## WHEN YOU SHINGLE YOUR BUILDING.

BY EMMA GARY WALLACE.

Experience is a good teacher, and there is no reason why the experience of one individual cannot be passed on for the profit of many.

Everyone who owns buildings faces the problem semi-frequently of shingling, and the temptation is to do this with as great a degree of economy as possible. Economy, however, does not always mean saving in original outlay. It takes longer to lay poor shingles than good ones. Besides, they do not give the service in point of length of life of a higher grade.

An occasional complaint is made that the clear, redwood shingles now favored by many for use in roofing, are inclined to rot around the wire nails which hold them, so that in time the shingles blow off in a high wind, while they are yet sound and serviceable. This objection is also advanced for some other grades of shingles and the experience of a carpenter who has observed closely, causes and results for over 50 years, should be of value in this connection. This man declares that the elements attack the metal of the nail, gradually corroding it and causing it to grow smaller with the passing seasons.

The tendency of the round, wire nails is to lose its thin, flat head in time so that the shingle is blamed for what is really the fault of the nail. If the nail itself has grown smaller and the head weakened, a high wind coming from the right direction will lift the shingles and gradually work the hole around the nail larger and larger. In time the shingles will blow off because they are no longer held firmly in place.

To prevent such a waste of labor and money, to say nothing of disappointment entailed is a simple matter if one knows how. Here is the secret. Use the old-fashioned cut shingle nails. These are of more durable material than the round variety and in addition to this, the heads are a part of the whole nail and so do not come off as readily. The square cutting clinches the wood at four points and so there is not the danger of loosening. This is especially true if the roof boards beneath are sound and trustworthy.

Turnips and potatoes, when fed raw, are not greatly relished by the hens. These should be cooked and fed with the mash mixture.

## Heavy Mail at Hickory, N. C.



International Harvester Cream Separators  
Lily—Primrose

Do you realize the great interest there is in modern, profit-building dairy methods just now? At a big Farmers' Union Meeting, comprising 18 counties in North Carolina, 20 of our booklets, "Facts and Figures on Dairying," were passed through the crowd from man to man. Those desiring copies were asked to write to the Catawba Creamery, Hickory, North Carolina.

In 25 days, 462 requests for booklets were received. Farmers are realizing that three cows with a good cream separator are as profitable as four without one. A good separator is one that gets all the cream down to one drop in each gallon of skim milk. That's efficiency—and that's the reason for the popularity of International Harvester separators, Lily and Primrose.

Lily and Primrose separators skim to this fine standard for years, because they are built on a sane design, strong, simple, reliable, sanitary. The few easy adjustments necessary, anyone can make. The single automatic oiling arrangement takes care of every bearing and sidesteps trouble.

"Facts and Figures on Dairying" will help you, too. Write for it and for a catalogue. See the IHC dealer who can furnish you with a Lily or a Primrose separator.

## International Harvester Company of America

(Incorporated)



CHICAGO

Champion Deering McCormick Milwaukee Osborne Plano

USA



## This Buggy \$36.50



We Save You \$25 or More by Our Factory-to-User Plan

You can't duplicate this buggy elsewhere at the price. It's proof of the faith we have in our Elkhart quality when we offer to guarantee the safe arrival of this buggy for your approval and then allow you

### 60 Days Free Trial

We know it's no risk for us, as our 43 years experience has taught us how to give the most possible for the money in wearing quality, appearance and general satisfaction. That's the reason why today we are the largest makers of buggies shipping direct to the farmer. We make Buggies in such large numbers that material and labor cost us less. We cut out all unnecessary selling costs and give you the benefits.

Write for our FREE

**Big Buggy Bargain Book**  
Mailed to anyone upon request. It illustrates and describes in detail our

### 175 Styles of Buggies

It also shows the high quality and low prices we offer in our

### 65 Styles of Harness

Tells how, by shipping direct to you, we save a big part of what you would otherwise have to pay and are able to make you such very low prices. Remember, it's free.

**Elkhart Carriage & Harness Mfg. Co.**  
714 Beardsley Ave., ELKHART, IND.

## Ponies Free



ANY Boy or Girl who wants to get a real, live Pony free should send me his name and address at once.

My free Pony Book tells the whole story. It gives pictures of the 364 ponies I have already given away and tells how the happy children got them free, and how you can get one of the next ones I will soon give away. Write your name below and I will send the Pony Book at once.

## Send Your Name

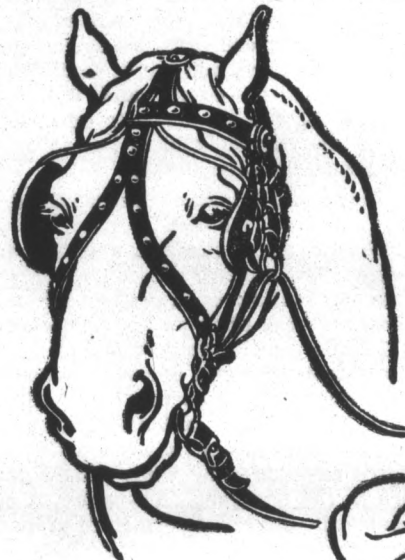
THE PONY KING, 256 E. 10th St., St. Paul, Minn.

Please send me your free Pony Book and tell me how to get a free Pony.

Name \_\_\_\_\_

P. O. \_\_\_\_\_

State \_\_\_\_\_ R.F.D. \_\_\_\_\_



Good harness deserves good care; keep the trimmings clean and bright with

## Old Dutch



## APOLLO BEST BLOOM Galvanized Sheets

Made from KEYSTONE COPPER STEEL—highest quality and most rust-resistant galvanized sheets manufactured for Culverts, Flumes, Tanks, Silos, Roofing and Siding.

Actual service tests have proved the superiority of APOLLO-KEYSTONE for all purposes where long service and resistance to corrosion are factors. Look for the Keystone added below the Apollo trade-mark—it indicates that Copper Steel is used. Apollo Roofing and Siding Products are strong, durable and reasonable in cost. Sold by weight by leading dealers everywhere. Send for a free copy of our "Better Buildings" booklet, giving full information and building plans of great value to every farmer and owner of buildings.

AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

## 1/3 SAVED

Buy Direct From MANUFACTURER



## Do Your Own Plumbing and Heating — NEW HARDIN EASY WAY

Get our "HANDY-MAN" FREE BOOK. Every home needs it. Shows new home improvements and everything in plumbing and heating supplies EXCLUSIVELY at wholesale prices. Any handy man can install our goods with this Free Book and Free easy installing plans. \$500.000 plants behind our guarantee. WRITE TODAY.

The Hardin-Lavin Co. 40 yrs. at 4553-63 Chicago Cottage Grove Ave.

RANGE FOR SALE, coal or wood, nearly new. Terms reasonable for quick sale. S. PHILLIPS, 1142 Beaubien St., Detroit, Michigan.

## \$99.00 Make Your Own Electric LIGHT

5¢ A DAY

With this self starting, electric lighting plant you can have electric lights in your farm home, country estate, church, general store, summer cottage, club, or plantation at 5¢ or less per day. Compact, simple—wife can operate it, use electric irons, washers, cleaners as well as plenty of lamps day or night. Get lights three minutes after uncrating. Write your needs for lights in detail in a letter, NOT A POSTAL CARD to the GRAY MOTOR CO., 479 Gray Motor Bldg., Detroit, Mich.

## BEEES, BEE SUPPLIES, BERRY BOXES AND SEEDS.

Send for free catalog and save freight. S. J. GRIGGS & COMPANY, Dept. A, Toledo, Ohio.

Mention Michigan Farmer when writing to advertisers



## Rock Bottom on the Very Best Steel Roofing Ever Made

This is positively the greatest roofing proposition ever made. Before you invest in new roof covering, siding or ceiling, first learn about the one best—by far the best from every viewpoint, and cheapest. Take no chances. Get Edwards' Freight Prepaid offers and note the big saving.

**EDWARDS** Reo Steel Cluster Shingles

### Tightcote Reo Steel Shingles

actually cost less—outlast three ordinary roofs—no painting or repairs. Rot-proof, fire-proof, rust-proof, and guaranteed lightning-proof. Any one can lay it, right or old shingles if you like.

### Impossible To Rust Edges and Nail Holes

Every sheet of Edwards' Galvanized Steel Shingles, Roofing, Siding, Ceiling or finish is extra heavy galvanized, piece at a time, by our exclusive TIGHTCOTE patented process after sheet has been stamped and resquared. Side and edges are as heavily galvanized as body of sheet. Means no weak spots to rust or corrode. By means of Edwards' Patent Interlocking Device (see illustration) all nails are driven through underlayer of metal only—no exposure—no leaks.

### Garage \$69.50 Up

Wide variety, many styles, all sizes of Portable, Fireproof Metal Garages, \$69.50 and up. Lowest prices ever made. Postal brings FREE 64-page Garage Catalog.

### FREE Roofing Book

Edwards' Reo Steel Cluster Shingles, V-Crimped, Corrugated, Standing Seam, Painted or Galvanized Roofing direct to you at "rock bottom" factory prices. Write today for FREIGHT PREPAID OFFER on the lowest prices ever made for World's Best Roofing. Free Samples and Roofing Book No. 467.

THE EDWARDS MFG. CO.,  
417-467 Pike St.,  
Cincinnati, Ohio

Note construction of Patent Interlocking Device, protecting nail heads from weather—making roof absolutely water tight.

**WORLD'S  
GREATEST  
ROOFING  
BOOK**

### SPECIAL OFFER COUPON

THE EDWARDS MFG. CO.,  
417-467 Pike St., Cincinnati, Ohio  
Please send FREE samples, Freight-  
Paid prices and World's Greatest Roof-  
ing Book No. 467.

Name.....

Address.....  
Largest Makers of Sheet Metal Products in the World

**FREE!**

Write for my 1916 Buggy Book today. Shows 150 snappy styles of genuine Split Hickory Vehicles. Tells about the most startling price-splitting offer ever made by any vehicle factory. A postal brings it free—postpaid.

**SPLIT HICKORY**

Are recognized the world's finest driving vehicles. Famous for easy riding, lightness, strength and long service. Nearly a quarter of a million in use. Every rig sold on 30 days free trial and 2 years guarantee. Send for book today. See for yourself the 1916 styles and the money you can save.

Address H. C. PHELPS, Pres.  
The OHIO CARRIAGE MFG. CO.  
Station 50  
COLUMBUS, OHIO

Catalog \$39.25  
Shows 150  
Other Styles and up

**PULL OUT THE  
STUMPS!**

**The HERCULES**

All Steel Triple Power Stump Puller pulls an acre of stumps a day—increases the value of your land 100%. Makes room for money crops. Guaranteed for 3 years against breakage from any cause. Send name for fine free book, 30 days free trial offer and special low-price proposition.

HERCULES MFG. CO.  
937 24th St.  
Centerville, Ia., U.S.A.

**R for a wet day**

**TOWER'S FISH BRAND  
REFLEX SLICKER \$3**

Keeps you dry and keeps you well.

A.J. Tower Co.  
Boston.

**MEN WANTED**

We positively teach you at home by mail to earn \$25 to \$50 weekly as Chauffeur or Repairman. Students assisted to positions. Best system, lowest price. MODELS FURNISHED. Write for Free Book.

Practical Auto School, 66-W, Beaver Street, New York

Mention The Michigan Farmer When Writing Advertisers

# Farm Commerce.

## The Milk Inspection Problem

AT the Lenawee County Round-up Farmers' Institute, Hon. George B. Horton, in discussing the subject of "The Modern Idea of Dairying," after reviewing the history of the dairy industry of the state, commented in part as follows on the system of inspection, by city boards of health now in vogue in the dairy districts, contributing to their milk supply:

Dairymen now find themselves subject to the absolute dictation of big corporations and the fads and fancies of boards of health of nearby and distant large cities, the mandates of which are sought to be enforced in the main by political influence appointed men having no knowledge of farm life and its environments, and thus poorly fitted to discriminate between the reasonable and the unreasonable, the justifiable and the unjustifiable, the necessary and the unnecessary. Moreover these mandates are Czar-like in that no hearing is accorded and no appeal provided for, except the dairyman may keep his milk at home, feed it to the pigs or go out of the business.

Now the question may very properly be asked, "Have dairymen any reasonable and justifiable rights to maintain in the matter, and should they in justice prepare themselves for a demanded hearing?"

Really, it is hardly conceivable that here is a question vital in many respects to both producer and the consumer, and yet from the position taken by the acting conservators of the consumer's welfare, one might easily conclude that the equity and the real right of it are all on their one side; while the dairymen have but to obey the mandates proclaimed.

### Does Good Equipment Insure Good Milk?

Now in all fairness it must be admitted that under such conditions authorities acting even with good motives are very likely to go to unreasonable and maybe unjust extremes in their demands; and it certainly seems that already city boards of health in their unrestrained authority have gone beyond reason, and have issued mandates unjustified by what should govern in the premises. Therefore, it becomes the duty of dairymen to prepare for the defensive so that they may not be unreasonably dealt with.

To substantiate our position in this matter, the following information is given: Boards of health from cities to which the great bulk of the milk produced in this vicinity is shipped for consumption are autocratically dictating as to the equipment employed in the production and care of milk and all of which involves varying degrees of money expenditure and labor, and with all this goes the inference that but a beginning is being made in what dairymen will be commanded to do.

Investigation will show that in many cases these demands are burdensome and are both unfair and unjust because unnecessary to insure the production of good milk. In the territory surrounding the large cities in the eastern states, the aggressive and arbitrary attitudes and movements of boards of health have provoked much conflict between them and the dairymen. So important were the questions and principles involved in the demands made that experiment stations at state colleges commence carefully planned investigations and comparisons to determine what justification there might be in it all.

At the beginning it was found that boards of health were proceeding upon the theory that if the equipment upon a dairy farm was in conformity with certain prescribed plans and mandates,

the quality of the milk produced need not be questioned, so that arbitrarily just by visiting the farms and without testing or even seeing the milk it was given a passport for delivery or, on the other hand, was summarily deprived of that privilege. In other words, it was the barns, the stable and the caring for equipment and apparatus that was being tested, instead of the milk, which in fact, should be the object of the test. Why, yes, it is the milk and not the buildings and equipment that is to be shipped to the cities for consumption, and what would consumers away in the cities know or care about the particular construction or color of a barn, or the particular methods of cooling, so long as the milk itself stood the test of good quality in all its requirements.

The experiment stations, to learn whether such a method of determining the standard quality of milk was justified, conducted an actual test of the milk, regardless of the equipment wherein it was produced. Samples were taken from an equal number of farms of accepted and rejected equip-

### SOME VERY PERTINENT QUESTIONS.

How far should the City Boards of Health be allowed to dictate the methods to be employed by dairymen in the production of milk for city consumers?

Has the farmer any rights in the matter of determining the conditions under which he may produce such milk?

Should license to sell be granted upon a showing of acceptable farm equipment or upon the delivery of wholesome milk at the receiving station?

ment, and the operation repeated for a fair comparative record as to quality, and with the result that the milk from the board of health black-listed farms was fully up with, and in a number of cases, much ahead of the milk from the O. K'd farms.

Here we have a marked demonstration of the difference between mere theories and actual facts. Then, too, the result of these tests reveals the great injustice done a lot of well-meaning dairy farmers of moderate means, who by force of circumstances must, so far as consistent, get along with just the actual essentials in financial outlay and labor employed.

To carry these tests a little farther and to more fully determine the necessity of much of health board demands, milk was taken from the simplest and most primitive old barn in the community, with old-fashioned board stanchions and very limited lighting along the sides, and with the result that a record for milk of a high quality, second to none, was established, and thus again facts were revealed and theories were discredited.

A practical application of these findings to the dairy farmers' business may be made of great financial importance and in many cases make all the difference between a money losing business and a fair profit thereon.

### The Question of Stable Air.

I hold in my hand a bulletin issued from the Cornell, New York, Experiment Station giving a picture on its front page of one of the little old primitive barns from which milk of the

highest standard has been produced. Along the line of exploding some other of the theoretical fads of health boards, I also cite you to Cornell Bulletin No. 409 which has in bold print upon its first page, these suggestive words: "Milk receives few bacteria from stable air." This finding by so high an authority lets us all breathe easier, doesn't it? For, in all this wild chase after bacteria all mixed up as between the friendly and the unfriendly, we have all been pretty badly scared and commenced to conclude that we were doomed anyway. Now as a few facts begin to come out about this bacteria business, we can begin to conclude, as it is told of the conclusions of Chauncey Depew, "There must be a lot of humbug about it." Chauncey Depew, the talented after-dinner speaker and United States Senator of New York, with several other farmers down there, had organized a "Farmers' Club," and for a better understanding agriculturally and in its kindred occupations, were following the practice of inviting various scientific men before the Club for talks along the lines of its objects and purposes. On one occasion the subject of bacteria and microbes was being discussed by an eminent professor from one of the state colleges and had aroused considerable fear among his hearers lest there was nothing left that was safe to eat, drink or do. When opportunity offered, Depew arose and said: "Mr. Chairman, I am much interested in the discourse of the learned professor, but from my observation and experience, I believe there is a lot of humbug about this bacteria and microbe business. Why," said he, "When I was a barefooted boy on the farm up at Peekskill it was my chore to bring the cows up from the pasture for the night and morning milking. As a slight reward for so doing I was permitted to take a tin cup and from it drink some of the warm milk that I had just drawn from the udder of one of the friendly cows, and this tin cup had hung from a nail upon a gate post, no one knew or noticed just how long during the summer, without having been scalded or even rinsed out. All through this I was a healthy boy, and it is worthy of note that other boys of the neighborhood did the same, and they were strong and healthy, too."

Now, this may not prove but that bad bacteria is very harmful under certain conditions, for it is probably true that in the case of the tin cup the hot sun gave it a most thorough cleansing every day, but then, under this theory we would all be wrong, for the sun-excluding and uncared-for milk house would be a veritable germ incubator.

Referring again to Cornell Bulletin No. 409, as a heading to the first paragraph it says: "False ideas overthrown." Then the paragraph reads: "Careful investigation of pure milk problems is proving that many current beliefs and practices are ill founded and the importance of many factors have been over-estimated, that over-refinement in securing stable cleanliness and in certain grooming processes is without effect in reducing the number of bacteria in milk, that straining and cooling the milk about the barns need not increase bacteria contamination, and that dairy score cards are not reliable indexes to the quality of the milk produced in the stable scored."

Paragraph 2 says: "An over-emphasized factor as proven by investigation is the influence of stable air on the bacteria content of the milk."

Score cards now in use give several points to stable air and cut severely for conditions that tend to increase the quantity of dust therein, or to disturb the air so that the dust will move about more freely. Cuts are also made for indications that dust has previously been in the air, such as the presence upon ledges and feed racks, yet the very careful studies conducted by the station proves clearly that the air in the stables under any ordinary conditions of dusting or disturbance, is an almost negligible factor, so far as it



affects the numbers of bacteria in the milk produced, and the number of bacteria falling into the milk during milking or during any short exposure in the stable under conditions allowable in any respectable dairy is so small as to be negligible.

From the showing here made it must be conclusive with all fair minded people that the demands of city boards of health, when exercising their authority unquestioned are unnecessarily and harmfully overdrawn and that an effort by the dairymen should be made to eliminate the unnecessary from the necessary, and thus protect themselves from great injustice and financial harm.

#### The Issue.

Now it should be understood at this point that those comparisons and references are not intended in any way to justify or even encourage the delivery or production of unclean and impure milk, for consumers have a right to expect, and boards of health should demand, the opposite.

The question at issue is: Shall prescribed equipment dictate and decide the case, or shall the milk itself be received or rejected according to its quality?

To set the dairymen right regarding this question, he must of course, know and recognize that the foundation for pure and wholesome milk is healthy cows, clean pastures, pure water, clean milking and a painstaking dairyman in charge.

Ah, now we have it, the whole thing depends upon the man in charge. As "cleanliness is next to godliness" as to one's person, it is nevertheless true with that part of farming known as dairying, and as thoughtfulness and close attention is essential to the proper conduct of any business, so it is necessary in clean and uncontaminated milk production. Then, too, clean and wholesome milk is none other whether produced out in the open with no equipment at all, in a plain simple shed, a very common barn, or in a palatial structure filled in and surrounded by all the special equipment that the boards of health can dictate or that money can buy.

The unusual plain unpainted little barn, as shown on the front page of the Cornell Bulletin, with its old-fashioned board stanchions which carries the almost enviable record of clean and wholesome milk production, shows every indication of having a good dairyman in charge. The floors are clean, the walls and ceilings are free from dust laden webs, and no fermenting piles of manure are seen about the place.

#### The Real Object is Clean Milk.

Do not forget the positive fact that just what has been done to produce good clean milk in this little barn is just as essential in a premises and equipment as complete as the most exacting board of health could think of arbitrarily ordering. \* \* \*

The Dairyman's attitude should be in support of good clean and well cared for milk, delivered at the receiving station, and for a most efficient and justifiable grading of milk at the receiving station. This is the place where it should be done, and thus leaving all farm process, style and expense of equipment to the dairyman himself. Let his delivered goods be the test. Then, if through cleanliness and painstaking care he can produce good and acceptable milk at a saving in labor and expense in equipment, he not only has had the freedom of the opportunity, but he has accomplished a thing which every manufacturer in the country strives to do, that is, increases the profits of the business by reducing the cost of production. In other words, put the responsibility of proving up, upon the dairyman himself, so that his thinking and his initiative may be developed for his own welfare and business success, instead of being under the humiliating and dwarfing ban of the present process; whereby city boards of health field men, leave at

the farm arbitrary instructions as to just what to build and just what to do.

Boards of health should willingly accept this plan as being much less expensive and by far the most efficient. An office laboratory at the receiving station, in which both the milk shipper and the boards of health could cooperate, would serve the whole purpose.

#### TO EXTEND CORN QUARANTINE.

A public hearing on the question of extending the existing quarantine against Indian corn from Java, India and parts of Oceania will be held on April 4, 1916, at the Department of Agriculture, Washington, D. C. A number of injurious corn diseases have been found in southeastern Asia, Australia, the Malayan Archipelago, Oceania, New Zealand, the Philippines, Japan and adjacent islands. In view of the value and importance of the American corn crop, it is considered advisable to establish quarantines against all countries from which the diseases might reach the United States. Recent investigations have shown that maize in British India, Java, Formosa and the Philippine Islands is subject to destructive attacks of at least two and possibly three species of downy mildews. One of these is known to occur also in the Fiji Islands and Queensland, Australia; it attacks sugar cane as well as maize.

The downy mildews found in Java, British India and the Philippines are favored by warm, moist weather such as is considered to be ideal for corn growing in the Mississippi Valley. If any of these mildews or other Oriental diseases of corn should succeed in entering the United States and reaching the Mississippi Valley, they would do immense damage.

#### Crop and Market Notes.

##### Michigan.

Northern Isabella and Southern Clare Co.'s, March 20.—A regular blizzard today. Good demand for hay and not much for sale. Beans nearly all sold. Fat cattle are scarce. Quite a large number of farmers preparing to build new barns. Auction sales are plentiful. Butter 25c; eggs 16c; wheat 95c; oats 38c; rye 80c; beans \$3.20; pork 10c; beef 10@11c; veal 11c.

Muskegon Co., March 22.—Land is covered with snow. Have had real winter weather most of the month of March. Wheat and rye were hurt by open weather early in the winter. Many farmers are buying grain; roughage is plentiful. Very little feed for sale. Young stock doing well. Cows are scarce and good ones hard to get. Hogs, dressed 11c; beef 9½c; mutton 14c; chickens 15c; eggs 21c; butter 35c; wheat \$1.05; rye 75c; corn 77c; oats 48c; buckwheat 80c.

Sanilac Co., March 24.—About six inches of firm snow covers the ground. Wheat, rye and meadows are thought to be in fair condition. Very little surplus feed on hand but enough for home use. Butter-fat 33c; eggs 18c; wheat \$1.06; potatoes \$1.20; beans \$3.40; cattle, fat \$6.50; hogs \$7.50. Auction sales are numerous.

Monroe Co., March 22.—March has been a cold month. Wheat, rye and meadows have been very much exposed. Meadows are heaving quite badly. Live stock is generally looking pretty good. Not enough feed for home use and a good many buying. Price for milk at the farmer's door \$1.55 per cwt; butter-fat 28@30c; eggs 20@21c; wheat \$1.11; oats 47@50c; beans very scarce at \$4.20; potatoes, choice \$1.15; poorer grades \$1@1.10.

Branch Co., March 20.—Wheat, rye and meadows are being damaged by weather. Live stock is looking well. A fair amount of feed on hand with some for sale. Some corn yet in the field. Butter-fat 35c; eggs 16c; butter 25c; wheat \$1.07; corn 65c; oats 39c. Farmers are preparing for spring work now. Hens doing fairly well.

##### New York.

Genesee Co., March 22.—Very deep snow. Roads badly drifted. Rye and wheat have been completely covered for many weeks. Live stock in good condition. Plenty of roughage for home use; not much for sale. Milk \$1.60@1.80 per cwt; butter-fat 32c; eggs 25c; wheat \$1; potatoes 95c; pea beans \$3.30; hogs \$9; steers \$7@8.65; calves \$9.50@10; fowls 15c lb; lambs, dressed \$18; loose hay \$15; oats 45c.

Niagara Co., March 21.—Plenty of snow. Wheat and rye have been covered for about six weeks but was poor before that. Stock is looking fair. Cows are good price but horses are low. Not much feed on hand except it is bought. Butter 22c; eggs 24c; flour \$7.50 per bbl; wheat \$1; oats 50c; corn \$1; hay, retail \$20 ton; hay, wholesale \$18; beans, pea \$3.30; red \$4; calves 10½c.



## Both Stand the Storms

Rigidity in the wind is only one of the many good features that distinguish the

## Farmers Silo

Keeps Its Hoops Tight Itself

Heavy door spring lugs made of car spring steel exert strong pressure all the time around the silo drawing the staves together, holding them firmly in place.

## Lillie's Special Brands

Our 1916 Michigan Fertilizer Formulas

Lillie's Special No. 1	- - 1-11-0	Lillie's Surprise	- - - 2-10-0
Lillie's Special No. 2	- - 2- 8-1	Lillie's Reliable Phosphate	-14-
Lillie's Special No. 3	- - 1- 9-1	Ground Limestone	
Lillie's General Crop	- - 1- 7-1	Hydrated Line	

FEEDS—Farmers Digester Tankage—  
60 Per Cent Protein.

Write For Agency Terms.

COLON C. LILLIE, State Agent

Coopersville, - Mich.

The Farmers Fertilizer Company  
COLUMBUS, - OHIO.



**Mr. Fruit Grower, Mr. Farmer, KEEP BEES**  
Your orchards will produce more fancy fruit by so doing. Your berry crop will be increased in quality and quantity. Your Alsike and Sweet Clover crops will be greatly benefited. You really cannot afford not to keep a few colonies. Tons of honey go to waste each year, for want of bees to gather it. Progressive farmers and fruit growers everywhere now realize the value of bees. We furnish complete equipment, Modern Hives, Pure Italian Bees, gentle and good honey gatherers. Our booklet "The Bee Keeper and The Fruit Grower" free. Also our general catalog of bee supplies.

**Berry Baskets** Send for catalog. We furnish the best wood berry basket made. Our wax lined paper basket is a cheap, clean package. Special offer—200 wax lined paper baskets, post paid for \$1.00.

M. H. HUNT & SON, Box 525, Lansing, Mich.

**Here's Our Offer—**  
Never Equalled in Values and Prices.

**CUT TIRE BILLS**  
30% to 40%  
**Buy Ours By Mail**

Manufacturers of Standard Make Tires give us the first choice of their

**FACTORY BLEMISHED TIRES**  
1-4 to 2-5 Below Regular Prices

Their negligible defects in finish—which only expert factory inspectors are able to detect—in no way affect their high standard of workmanship or their proved durability. This makes it possible for us to absolutely guarantee each tire sold for 3,000 miles wear.

	Plain	Non-Skid	Guaranteed Tubes
28 by 3	\$5.30	\$6.20	\$1.90
30 by 3	6.25	6.95	2.00
30 by 3½	7.95	8.95	2.35
31 by 3½	8.45	9.25	2.50
32 by 3½	8.80	9.75	2.60
33 by 4	11.95	13.65	3.30
34 by 4	12.40	13.95	3.40
35 by 4	12.25	14.25	3.50
36 by 4	12.75	14.75	3.60
35 by 4½	16.80	18.55	4.25
36 by 4½	17.10	18.95	4.35
37 by 4½	17.45	19.50	4.50
36 by 5	19.25	21.10	5.15
37 by 5	19.75	21.75	5.25

Note above prices on our tubes—they're Standard Firsts and backed with a whole year's guarantee.

Here's the surest solution of your tire troubles:—Send no money. Simply state what size and style of tire you want. We send C. O. D. on approval. If not satisfied after the closest inspection return at our expense. A fairer offer could not be made. You take no risk at any time.

Send us your order today—it means a big saving to you and the end of all your tire troubles. State whether Plain or Non-Skid, if Clincher, Q. D. or S. S.

PHILADELPHIA MOTOR TIRE CO.,  
240 No. Broad Street Philadelphia, Pa.

**Cheap Copper Sulphate**  
can no longer be had but growers of Potatoes, Grapes and Vegetables who have used Sulfocide for the past 5 or 6 years say that they prefer it to Bordeaux mixture as it is cheaper and easier to use and equally effective. 1 gallon makes 200 gallons of Spray. Write today for booklet.

B. G. Pratt Company  
Dept. 22  
50 Church St. - New York

**BUILD YOUR OWN SILO**

Save a lot of money—costs less than wood—built of concrete, solid as rock, proof against fire, lightning, cyclone, trouble—no bands to tighten or loosen.

Wonderful Glazone Enamel gives a smooth, hard, acid-proof, air-tight interior surface—will not crack or chip.

Handsome Appearance—constructed of patented concrete blocks.

Make the blocks yourself. You can't go wrong. Complete and simple directions and drawings furnished.

Address Dept. 13 for special proposition

CLIMAX MFG. CO.,  
ANDERSON, INDIANA

**Save Silo Money**

GET the truth about silos and silage. Get our proposition and learn how you can own an

**INDIANA SILO**

Pay for it out of what it saves on feed bills. There is no time limit to our guarantee. Write today for Free Catalog. Address nearest office.

THE INDIANA SILO CO., 532 Union Bldg., Anderson, Ind.  
Kansas City, Mo., Des Moines, Ia., Fort Worth, Tex.  
532 Exchange Bldg., 532 Indiana Bldg., 532 Live Stock Bldg.

**PURE FIELD SEED**  
Clover, Timothy, Alsike, Alfalfa and all kinds of PURE FIELD SEEDS direct from producer to consumer; free from all noxious weeds. Ask for samples.

A. C. HOYT & CO., Box M, FOSTORIA, OHIO.

**SEED CORN AND GARDEN SEEDS**  
Your name and address will bring you our catalog. More and Better Seeds for the money.

J. BUCKINGHAM, Seedsman, BELLEVUE, OHIO

**SWEET CLOVER** Builds Worn Out Soil. Has higher protein content than alfalfa. Write for prices and information. Everett Barton, B. 129, Falmouth, Ky.

**For Sale** Sudan Grass Seed grown in Michigan. 15c lb. Beardless Barley \$1.10 per bu. H. L. Cole, Palmyra, Mich.



# Markets.

## GRAINS AND SEEDS.

March 28, 1916.

**Wheat.**—American crop conditions came to the front last week as an influential factor in the determination of wheat values, which fully offset the importance of international political complications. Although needed rains have ended the drought in the southwest the general situation indicates a limited crop of both winter and spring wheat for 1916. Experts declare that in some sections the damage is irreparable and the acreage of winter wheat runs much less than last year. Besides, the lateness of the spring opening, the small amount of plowing done last fall in the spring wheat sections of the states and Northwestern Canada and a big reduction in the amount of labor in the provinces, all make certain a very great falling off in the American production this coming season. There was improvement in seaboard buying Monday and railroads are partly recovered from an unprecedented congestion of traffic. A year ago No. 2 red wheat was quoted at \$1.50 per bushel. Detroit's last week's quotations were:

	No. 2 Red.	No. 1 White.	May.
Wednesday	1.13	1.08	1.14½
Thursday	1.12½	1.07½	1.14
Friday	1.13	1.08	1.14½
Saturday	1.12½	1.07½	1.13½
Monday	1.14	1.09	1.15½
Tuesday	1.17½	1.12½	1.18½

Chicago.—May wheat \$1.13½; July \$1.10½; Sept., \$1.08½.

**Corn.**—Stormy weather interfering with the free movement of corn, and an improved condition in the shipping demand in central western markets, helped corn to recover a large part of the break of last week. The advancing prices for live stock are encouraging feeders to extend feed periods and thus increased quantities of corn will be required on the farms and in feed lots. A year ago No. 3 corn was quoted at 73c per bushel. Last week's quotations at Detroit were:

	No. 3 Mixed.	No. 3 Yellow.
Wednesday	72½	75
Thursday	71½	74
Friday	70½	73
Saturday	71	73½
Monday	71½	74
Tuesday	72	74½

Chicago.—May corn 73½c; July 75½c; Sept., 75½c.

**Oats.**—A moderate business in this department kept prices steady and the trade firm. A year ago standard oats were quoted at 58c per bushel. Last week's Detroit quotations were:

	Standard.	No. 3 White.
Wednesday	48	47
Thursday	48	47
Friday	48	47
Saturday	48	47
Monday	48	47
Tuesday	48	47

Chicago.—May oats 43½c per bu; July 42½c; Sept. 40½c.

**Rye.**—Market slow, with cash No. 2 1c lower, or 92c per bushel.

**Barley.**—Malting grades lower at Milwaukee at 67¢74c, and 60¢74c at Chicago.

**Beans.**—Demand continues active at steady last week's prices. Quotations: Cash beans \$3.65; April \$3.70. At Chicago trade is firm and supplies small. Pea beans, hand-picked, best \$3.80@3.90; do. prime, choice, common to good \$3.60@3.65; red kidneys \$4.75@5.25.

**Peas.**—Prices are nominal at \$2.40@2.50 per bushel, sacks included, at Chicago.

**Clover Seed.**—Prime spot red clover \$11.75; prime alsike \$9.50. At Toledo prime \$11.50; prime alsike \$9.40.

**Timothy Seed.**—Higher at \$3.60 per bushel.

## FLOUR AND FEEDS.

**Flour.**—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.50; seconds, \$6; straight \$5.70; spring patent \$6.70; rye flour \$6.

**Feed.**—In 100-lb. sacks, jobbing lots are: Bran \$24; standard middlings \$25; fine middlings \$30; cracked corn \$31.50; corn and oat chop \$28 per ton. Hay.—No. 1 timothy \$18@18.50; standard timothy \$17@17.50; light mixed \$17@17.50; No. 2 timothy \$15@15.50; No. 1 mixed \$14@15; No. 1 clover \$12@13.

Chicago.—Higher. Choice timothy \$18.50@19; No. 1 do. \$16@17; No. 2 \$14@15.

**Straw.**—Wheat and oat straw \$6.50@7; rye \$7.50@8 per ton.

## DAIRY AND POULTRY PRODUCTS.

**Butter.**—Best creamery is firm and unchanged but second grade has declined ½c. Demand is active. Extra creamery 36c; firsts 34½c; dairy 24c; packing stock 20c.

**Eggs.**—Conditions are not quite as firm as last week but prices remain the same. Price for the week, based on sales, is 36c.

Chicago.—Market continues firm and prices are unchanged except for dairies and packing stock which are higher. Larger receipts favor buyers but high grade goods are still scarce. Extra creamery 36c; extra firsts 35@35½c; firsts 33@34½c; extra dairies 35c; packing stock 23½c.

**Eggs.**—The demand is good and the market firm at unchanged prices. Current receipts are quoted at 19½c; candled firsts 20c.

Chicago.—The feeling continues to be steady and trade is good. Prices are slightly higher. Firsts 19½c; ordinary firsts 18½@18½c; miscellaneous lots, cases included 18@19c.

**Poultry.**—Offerings continue small and demand is good. Prices are unchanged except for geese which are 1c lower. Turkeys 16@17c a lb; spring turkeys 21@22c; fowls 14@19½c, according to quality; spring chickens 18@19c; ducks 19@20c; geese 16@17c. Chicago.—The receipts are moderate and demand fair. There is little change in prices. Turkeys 12@20c, depending on the quality; fowls 12½@16½c; springs 17½c; ducks 18c; geese 10@13c a pound.

## FRUITS AND VEGETABLES.

**Apples.**—Apples continue easy but are going liberally into consumption. Greenings and other varieties which Baldwins \$3@3.50; Steel Red \$4@4.50. At Chicago the supply is still good and Greenings and other varieties which show effect of storage are easy. No. 1 Greenings are quoted at \$2.50@3.25 per bbl; Jonathans, No. 1 \$3.50@4; Baldwins \$3@3.25; Spys \$3.50@4.50.

**Potatoes.**—Potatoes are in good demand at last week's prices. Carlots on track, white \$1.05@1.08; red 95c@1 per bushel. At Chicago the market is firm and good stock is in demand. Poor stock is easy. Prices are unchanged. Michigan whites 90@95c a bushel; other kinds 85@97c.

## WOOL AND HIDES.

**Wool.**—Firmness continues to characterize the wool trade, and both manufacturers and dealers are hurrying their agents to the western states for locating future supplies. Had it not been for the importations of wool there would have been a famine in that product this season. Prices are strong with Michigan unwashed delaines at Boston quoted at 31@32c; do combing 32@37c; do clothing 26@31c.

**Hides.**—No. 1 cured 17c; do. green 15c; No. 1 cured bulls 13c; do. green 10c; No. 1 cured calf 25c; do. green 24c; No. 1 horsehides \$4.50; No. 2 \$3.50; No. 2 hides 1c lower than the No. 1; sheepskins 50c@52, according to amount of wool.

## GRAND RAPIDS.

Fresh eggs are worth 18@19c, and buying for storage purposes will begin this week. No. 1 dairy butter is now quoted at 25@26c. Dressed hogs are 11c; fowls 15@16c. Grain prices do not show much change from last week, with No. 2 red wheat at \$1.03. The potato market is doing rather better, with prices around 80@85c.

## DETROIT EASTERN MARKET.

A seasonable volume of business was done Tuesday morning by the farmers on the Eastern Market. Apples moved fairly well at 75c@1.40 per bushel; potatoes \$1.15@1.25 per bushel; lettuce 60@65c; parsnips 50@60c; cabbage 60@85c; eggs 25c; loose hay sells slowly at \$18@22 per ton.

## LIVE STOCK MARKETS.

### Buffalo.

March 27, 1916.  
(Special Report of Dunning and Stevens, New York Central Stock Yards, Buffalo, N. Y.)

Receipts here today as follows: Cattle 150 cars; hogs 85 d. d.; sheep and lambs 40 d. d.; calves 1500 head.

With 150 cars of cattle here today, including about 25 cars of shipping cattle, the market was strong, with the good cattle selling 10c higher, but the medium cattle were a little slower trade and the bulk of them went on a steady basis. There was a good demand for the butcher stuff, bulk of them went at about steady prices. We look for a fair run of cattle next Monday and a good market, in fact, we are very bullish on the good quality corn-fed cattle and would advise a man to hold his cattle back and finish them,

as we think it will pay him.

Receipts of hogs were fully up to expectations, about 85 double decks on sale. The demand was very light from all sources and prices 10@15c lower on all but pig weights. A few selected hogs sold at \$10.30@10.35, with the bulk around \$10.25; pigs and lights \$9@9.50; roughs \$9.25; stags \$6.50@7.50. Several loads of hogs arrived late that were unsold at close and the late trade slightly lower than opening.

Market was active on choice sheep and lambs, but slow on medium and coarse, with prices 25c lower than the close of last week. About all sold and we look for steady to a shade higher prices last of the week.

We quote: Lambs \$11.75@11.85; cull to fair \$8@11.65; yearlings \$8.50@10.75; bucks \$4.50@7.50; handy ewes \$8.50@8.75; heavy do \$8.50@8.75; wethers \$8.75@9.40; cull sheep \$4.50@7; veals, good to choice \$10.25@10.50; common to fair \$8@10; heavy \$6@9.

### Chicago.

March 27, 1916.

**Cattle.** Hogs. Sheep.  
Receipts today..16,000 38,000 10,000  
Same day 1915..16,062 24,055 7,092  
Last week.....38,378 152,087 61,511  
Same wk 1915..31,738 127,862 56,392  
The cattle receipts are extremely small today for Monday, but butcher stock started off at least 10@15c higher, with some reported sales at an even greater advance, while prospects were that steers would sell better. Hogs were 5@10c higher at \$9.45@9.95, with prime light singeing shipping hogs bringing \$10@10.10. Hogs marketed last week averaged 221 lbs. Sheep and lambs are opening 10@20c higher, with top lambs at \$11.90.

Cattle prices firmed up last week under moderate receipts and a good general local and shipping demand, with sales at the highest prices recorded this year. The great bulk of the steers crossed the scales at \$8.50@9.60, with the choicest class of handy and heavy-corn-fed steers taken at a range of \$9.50@10.05, while the poorer class of thin light steers went at \$7.25@8.50. Medium grade steers were purchased at \$8.60@8.95 and a good class of cattle at \$9@9.45. Butcher stock was especially active at advancing prices, with cows taken at \$5.15@8.40 and heifers at \$5.25@9.25, although very few prime yearling heifers went higher than \$8.50. Cutters sold at \$4.50@5.10, canners at \$3.50@4.45 and bulls at \$5.25@8. There was the usual active traffic in calves, sales being on the basis of \$5@10.50 for rough heavy to prime light vealers, with shippers taking the larger share of the better class of heavies. There was a fairly good demand for stockers and feeders most of the week, the firmness in prices for desirable offerings being due mainly to the moderate supply. Numerous lots of choice bred feeders sold at \$8 and upward to \$8.35, with the high point \$8.55 for 18 head of prime 1103-lb. feeding steers. Plain and medium feeder steers sold around \$7.40@7.75, and only the poorer class of little stock steers sold around \$6.50 and under, with lots averaging around 450 to 500 pounds purchased as low as \$5.50. So far as desirable beef cattle were concerned, the prevailing opinion was that the outlook was promising, with improved consumption of beef and little prospect of excessive supplies of fat beef in the near future. However, it is best for country shippers to keep close watch on the market and act conservatively in shipping to market, avoiding so far as possible the weak spots. Cattle prices averaged 15@25c higher last week.

Hogs were held back last week by numerous stock shippers because of the large decline that had taken place since the recent high time, when the choicest consignments sold above \$10. The smaller offerings helped strengthen prices, and moderate advances took place as the week rolled by, with good eastern shipments from here on some days. The receipts averaged extremely well in quality, and the great bulk sold close to daily top prices, with prime lots of weighty shipping barrows and prime light shipping hogs selling at top figures. Recent receipts of hogs have averaged 215 lbs., comparing with 211 lbs. a week earlier, 206 lbs. a month ago, 191 lbs. three months ago, 186 lbs. four months ago, 234 lbs. a year ago and 236 lbs. two years ago. Pigs sold at a large discount from the prices paid for matured hogs, and so did the cheaper class of hogs of light weight. The big packers were apt to take a bearish attitude and hold back when the market was advancing. At the week's close hogs sold at \$9.30@9.72½ for light bacon, with the best heavy shipping hogs at \$9.75@9.90 and prime light singeing hogs averaging around 180 to 210 lbs. selling for shipment to Canada up to \$10. Pigs brought \$6.75@8.70.

Sheep and lambs continued to be marketed very sparingly last week, with shipments from Colorado com-

prising a large share of the daily offerings, and shorn flocks formed an increasing percentage of the receipts. The packers wanted the wool because of its advanced value and insisted upon buying clipped flocks at a large discount. Prime unshorn lambs advanced to a new high figure, and heavy lambs sold at a marked discount from prices paid for prime medium weight lambs. Lambs closed at \$8.75@11.70; feeding lambs at \$10@11; yearlings at \$9@10.50; wethers at \$7.75@9.35; ewes at \$5@8.85 and bucks at \$6.50@7.75. Shorn lambs brought \$7@9.75, and shorn sheep and yearlings sold at a discount of \$1.50@2 from the above quotations.

Horses were marketed freely last week and sold very well on the whole, the principal feature being the large demand for army horses. Prices were mostly unchanged, with sales of little southern horses at \$50@75, farm horses at \$70@120, drivers at \$100@200 and commercial chunks at \$165@235. Larger horses of good to prime quality brought \$240@300, few selling as high as \$250.

## LIVE STOCK NEWS.

In a recent interview, E. H. Trimbee, one of the largest sheep and lamb feeders of the Fort Collins, Col., sheep feeding district, said that more than half of the lambs fattened in northern Colorado had been marketed. He shipped to market a short time ago a large number of Mexican lambs of his own feeding and knows thoroughly the situation in that important sheep state. He stated that the San Luis lambs had been marketed, while a good start has been made on the Arkansas Valley crop of lambs. Most of the remaining lambs are in northern Colorado, and Mr. Trimbee said that not more than 75 carloads of lambs were put on second feed for the May market. He believes that the shipments to market will be strung out as much as possible, for feeders are counting on an extremely high market as the end of the present feeding season approaches and are nursing along their flocks and abstaining from sending any lambs to the shambles prematurely. He sounds a note of warning to intending buyers of feeders to act cautiously next summer and fall when they start out to buy their feeding stock, maintaining that it is foolish to expect a repetition of the big prices paid for fat lambs this winter during the next winter unless the 1916 crop of lambs meets with some disaster. He thinks the breeders will "want the earth, with a gold fence around it," for feeding lambs next summer.

Hogs were hurried to market with such widespread liberality following the recent boom in the Chicago market that landed prime lots above \$10 per 100 lbs. that a sharp reaction set in, carrying prices much lower. One of the weakening factors that disturbed the market was the practice of many stockmen in carrying over hogs to the following day because they hoped by so doing to obtain higher prices. This resulted in uncomfortable accumulations of hogs, and the packers followed out their usual custom of abstaining from buying the "stale" hogs unless owners would accept a decided discount from prices paid for fresh arrivals. It has been for many years the practice of the packers to pursue this course for the purpose of discouraging the carrying over practice of owners. Looking ahead, it may be said that the prevailing belief is that hogs will ultimately sell higher than ever, even if there are breaks in the prices from time to time due to too free marketing. According to all accounts, there are no excessive supplies of hogs in feeding districts, and owners should act conservatively in shipping their remaining holdings.

## MICHIGAN CO-OPERATIVE DOINGS.

A farmers' co-operative shipping association has just been organized at Burr Oak to be known as the Burr Oak Co-operative Association, for the purpose of marketing farm produce of all kinds and the purchase of all supplies need on the farms. Mr. Duntzen, manager of the Coldwater Co-operative Company, has been with us at two meetings and has explained the plan on which the various cooperative companies in Branch and Hillsdale counties are organized and the Burr Oak organization will be conducted on a similar plan. There are nearly a hundred members, all of whom are farmers or farm owners. The officers are: George Baumeister, president; Ralph Bordner, vice-president; Henry Ahlgrim, secretary and treasurer. Mr. Emil Frohreich, a former stock buyer, has been engaged as manager. This is the first organization of its kind in St. Joseph county.—Ralph Bordner.

Experienced cattle feeders say that prices for choice stocker and feeder cattle are getting dangerously high, and the same is true of feeding lambs.



## THIS IS THE FIRST EDITION.

The first edition is sent to those who have not expressed a desire for the latest markets. The late market edition will be sent on request at any time.

## DETROIT LIVE STOCK MARKET.

## Thursday's Market.

March 23, 1916.

## Cattle.

Receipts 2169. The storm Tuesday night did not seem to make much difference in the handling of live stock by the various Detroit railroads and satisfactory service was rendered by all of them. The snow storm made the handling of stock difficult but everything passed off nicely.

The cattle trade opened up dull with cow grades 15¢ lower, but on Wednesday it took a brace around noon and was active at last week's prices on all grades and on Thursday the trade was active and the close strong on all grades as follows: Best heavy steers \$8@8.50; best handy weight butcher steers \$7.50@7.75; mixed steers and heifers \$7@7.25; handy light butchers \$6.75@7; light butchers \$6.50@6.75; best cows \$6@6.50; butcher cows \$5.50@5.75; common cows \$4.50@5; canners \$4@4.25; best heavy bulls \$6@6.50; bologna bulls \$5.75@6; stock bulls \$5.25@5.50; feeders \$7@7.25; stockers \$6.50@7; milkers and springers \$4@90.

Bishop, B. & H. sold Newton B. Co. 3 steers av 1100 at \$7, 3 do av 1200 at \$7.25, 1 do wgh 860 at \$6.75, 1 cow wgh 990 at \$5.50, 3 do av 1183 at \$6.25, 4 do av 1085 at \$5.50, 8 do av 807 at \$4.10, 2 do av 965 at \$5.50; to Kamman B. Co. 17 steers av 932 at \$7.50, 2 bulls av 1125 at \$6.50; to Zehner Bros. P. Co. 9 steers av 1045 at \$7.90, 1 do wgh 1430 at \$8, 16 do av 967 at \$7.65; to Nagle P. Co. 3 do av 833 at \$7.25, 7 do av 833 at \$6.65; to Hammond, S. & Co. 6 do av 826 at \$7; to Armour & Co. 1 bull wgh 1410 at \$6.25, 4 cows av 875 at \$4.25, 5 do av 980 at \$5.75; to Mindeck Co. 9 do av 1050 at \$5.50; to Donnan 11 steers av 798 at \$6.60; to Thompson Bros. 11 butchers av \$40 at \$7; to Hammond, S. & Co. 8 do av 881 at \$6.90, 3 steers av 950 at \$8, 4 do av 712 at \$6.75; to Belfert 5 bulls av 1110 at \$6.25; to Bray 1 cow wgh 960 at \$4, 5 cows av 1064 at \$6, 8 stockers av 684 at \$6.60; to Breitenbeck 2 steers av 890 at \$6.70, 1 cow wgh 1230 at \$5.25, 3 do av 947 at \$5.85; to Bresnahan 15 steers av 1244 at \$7.60, 4 do av 1460 at \$6.75; to Mich. B. Co. 19 cows av 1034 at \$5.50, 7 do av 927 at \$4.25; to Breitenbeck 9 heifers av 700 at \$6.10; to Hammond, S. & Co. 25 steers av 1106 at \$8; to Newton B. Co. 3 do av 663 at \$6.75, 4 do av 990 at \$7.25.

Reason & S. sold Bray 4 cows av 1180 at \$6.25; to Thompson Bros. 1 bull wgh 1520 at \$6.50, 1 do wgh 1120 at \$5.75, 6 cows av 1016 at \$6.15, 20 steers av 927 at \$7.40, 1 do wgh 1200 at \$6.85, 10 do av 676 at \$6.75; to Nagle P. Co. 8 do av 1090 at \$7.85; to Bray 1 do wgh 1260 at \$9, 1 do wgh 1060 at \$8.50, 2 cows av 1030 at \$4.35.

## Veal Calves.

Receipts 997. The veal calf trade was fairly active on good grades at a decline of 25¢@50¢ from last week, selling at \$10@11. Common grades were very dull and fully \$1 per cwt lower, common and medium selling at \$6@9.50.

Bishop, B. & H. sold Thompson Bros. 2 av 140 at \$11.25, 5 av 145 at \$11, 10 av 152 at \$11, 3 av 170 at \$10.75, 13 av 180 at \$11; to Hammond, S. & Co. 15 av 150 at \$11, 2 av 230 at \$6, 27 av 150 at \$10.50; to Newton B. Co. 27 av 140 at \$11; to Sullivan P. Co. 49 av 150 at \$11; to Hammond, S. & Co. 8 av 150 at \$11, 2 av 145 at \$10.50, 4 av 155 at \$8.50, 6 av 150 at \$11, 33 av 145 at \$11.

## Sheep and Lambs.

Receipts 1138. The sheep and lamb trade was active and the quality considerably better than for several weeks. Good grades are in active demand as follows: Best lambs \$11@11.25; fair do \$10@10.50; light to common do \$8@9; yearlings \$9.50@10; fair to good sheep \$7@8; culls and common \$5@6.

Sandel, S. B. & G. sold Nagle P. Co. 2 lambs av 100 at \$10.50, 1 sheep wgh 120 at \$7.75, 27 lambs av 90 at \$10.40, 4 do av 65 at \$10, 3 do av 90 at \$10.50, 12 do av 110 at \$10.40.

Roe Com. Co. sold Nagle P. Co. 26 lambs av 65 at \$10, 38 do av 90 at \$10.75.

## Hogs.

Receipts 8772. The hog trade on Wednesday was dull, the top selling at \$9.60; on Thursday the trade was more active and prices averaged 5¢@10¢ higher. Pigs \$8@8.50; yorkers and heavy \$9.65@9.70.

## LIVE STOCK NEWS.

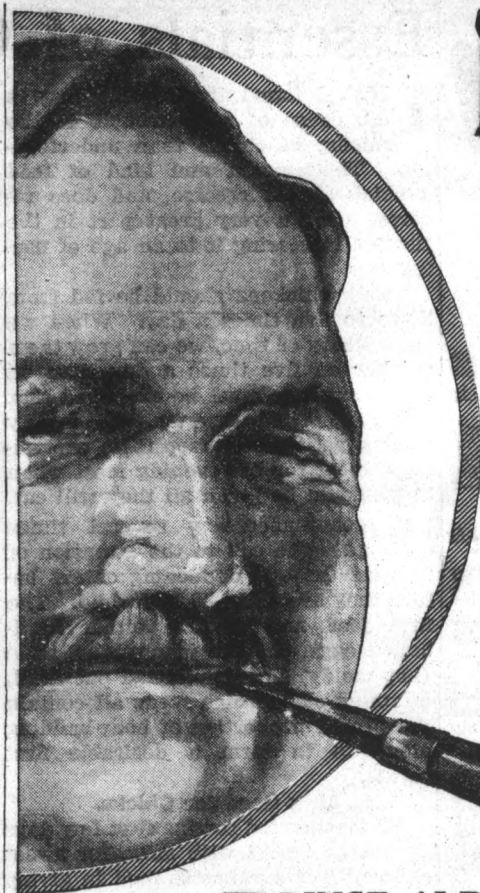
Never in the past has the sheep and lamb market been in such a strong position as it is today, with the greatest shortage of mutton and lamb in feeding districts ever known. With a large demand in the Chicago market and nowhere near enough offerings to meet it, it is inevitable that high prices should prevail, with recent prices for choice flocks the highest ever seen at this season of the year. Colorado lambs of choice quality are comprising the greater part of the dairy receipts, with more heavy lots than were ever seen before in March, many of the consignments averaging from 87 to 92 pounds in weight, while the popular demand still centers strongly on fat lambs of medium weight, these going at the highest prices. Shorn lambs are arriving in fair numbers, and because of the dearthness of wool, they have to go at a large discount. Feeding lambs are much called for, but not many are forthcoming, and sales are made at the highest prices on record, many sheep-omen regarding values as dangerously high. There is also a large eastern and western call for good breeders, which also are scarce and dear.

Cattle prices have been lifted to extremely high levels in recent weeks as the natural result of market conditions, for the receipts have fallen off materially, placing the fixing of prices in the control of sellers. Here was such an extensive marketing during the winter period of warmed-up and short-fed cattle as to make big inroads in the future supply of cattle, and now the stockmen who hung on are reaping their reward. The advance in prices has taken in pretty much everything included under the general head of cattle, while naturally being much greater for certain descriptions than for others, and especially large booms have taken place in stockers and feeders since an outlet was re-opened for them several weeks ago. A large advance has also been effected in the best class of heavy beefs and handy weights, with not nearly enough offered to go around, while the general range of cattle values stands for higher than in most former years, 1915 included. Far more cattle were slaughtered in western markets during the first two months of 1916 than in the same time last year, but conditions are changed now, although the exports of beef have fallen off in a marked degree of late, with larger purchases of cured hog meats for use of the allied armies of Europe in place of canned beef. The influence of the feeder demand is seen in the fact that the best stockers and feeders have sold as high recently as \$8 per 100 lbs.

Hogs have had one of the most remarkable booms in prices in recent weeks ever experienced, and the rise in values has caused widespread comment. It seems quite among the probabilities that further advances will take place, as the shortage of hogs is pronounced, following the enormous marketing of pigs and underweights during the last few months, due to the scarcity and dearthness of good feeding corn and the poor feeding quality of the soft corn. On the late boom prime hogs were sold in the Chicago stock yards for \$10.10 per 100 lbs., and average prices were the highest paid at any time since April, 1910. The receipts of hogs have fallen off materially, and in a recent week the receipts in the Chicago market were the smallest seen in any week since the early part of last November. Eastern shippers have bought a big share of the best class of heavy and light hogs, and this outside buying was a powerful bullish factor, although the local packers supported the market at times in a manner that attested their wish to encourage farmers to engage in breeding hogs for the market. Looking backward recalls the fact that bear raids made by the packers a few years ago were followed by a shortage that sent prices for hogs up to \$11.20 per 100 lbs., the highest price recorded at any time since the Civil War. Recently hogs have sold about \$3 per 100 lbs. higher than a year ago and far higher than in most former years, while provisions have followed the same course, with pork selling considerably more than \$5 per barrel higher than a year earlier.

In a single week sales in El Paso, Texas, embraced about 3,600 head of bred ewes at \$7 per head free on board cars. They were fair to good New Mexicos of Rambouillet breeding. A large demand for good breeders down there is reported.

For more than a year there has been a widespread buying of breeding cattle throughout the western states, and it is expected that the calf crop will be materially increased. Choice breeders are largely wanted, and the call for Hereford breeders is remarkably large. Prices are high, and in parts of Texas it is impossible to buy Hereford heifers for less than \$65 per head.



# PRINCE ALBERT

the national joy smoke

makes you want to fire up your old jimmy pipe!

Copyright 1914 by R. J. Reynolds Tobacco Co.

PRINCE ALBERT tobacco throws open the gates to every man fond of a pipe—it's so friendly! Just makes smoke joy possible for all degrees of tender tongues and tastes! The patented process cuts out bite and parch! And you can't get better proof than the fact that Prince Albert is today smoked not only throughout the United States, but all over the world!

First thing you do next, locate that old jimmy pipe; invest 5c or 10c for a supply of P. A. And fall to like you are on the right track. For Prince Albert is better than the kindest word we ever have said about it. And you'll find that's right!

You can buy Prince Albert everywhere in the tippy red bag, 5c; or the tidy red tin, 10c; in pound or half-pound tin humidor or in the handsome crystal glass pound humidor with sponge-moistener top that keeps P. A. fit-as-a-thoroughbred!

R. J. REYNOLDS TOBACCO CO., Winston-Salem, N. C.



On the reverse side of this tidy red tin you will read: "Process Patented July 30th, 1907," which has made three men smoke pipes where one smoked before!

## Horse Owners Should Use GOMBAULT'S CAUSTIC BALSAM

The Great French Veterinary Remedy. A SAFE, SPEEDY & POSITIVE CURE.

Prepared exclusively by J. E. Gombault, ex-Veterinary Surgeon to the French Government Stud.



### SUPERSEDES ALL CAUTERY OR FIRING.

Impossible to produce any scar or blemish. The safest best Blister ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. WE GUARANTEE that one tablespoonful of Caustic Balsam will produce more actual results than a whole bottle of any liniment or spavin cure mixture ever made. Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

## DO NOT BUY FENCE UNTIL YOU GET OUR DIRECT FROM FACTORY PRICES GUARANTEE

We guarantee our fence to be made from the best galvanized full gauge wire both stay, line wire and knot, and to be the most perfectly woven fence on the market

WRITE TODAY FOR CATALOG TO

The United Fence Co. of Port Huron Port Huron, Mich. Box 41. Minneapolis, Minn.

## Bickmore's Gall Cure

will cure that Saddle or Collar Gall whether the horse is idle or at work. At dealers, 25c, 50c and \$1.00 or direct from THE BICKMORE COMPANY Box 57 Old Town, Maine

## MINERAL HEAVE COMPOUND CURES HEAVES

Booklet Free \$3 Package guaranteed to give satisfaction or money back. \$1 Package sufficient for ordinary cases. MINERAL HEAVE REMEDY CO., 463 Fourth Ave., Pittsburg, Pa.

## HAY OUR NEW LOCATION—

623-625 Wabash Bldg., Pittsburgh, Pa. Daniel McCaffrey's Sons Co.

## HAY

Ship your good quality to us. Highest Market Prices. E. L. Richmond Co., Detroit.

THE HARPSTER COMMISSION CO., Union Stock Yards, Toledo, O. Sell live stock on commission, get highest prices and best fills. Try them. Daily market, force of six looks after your interest. Financially backed by over \$1,000,000.

FARMERS—We will pay premiums whenever possible above the highest official Detroit Market quotation for your eggs shipped direct to us by express. Write us for information. It will pay you. American Butter & Cheese Co., Detroit, Mich.

Clean, Disease-Free SEED POTATOES \$1.25 PER BU. John V. Harrison, Sec. of Manton Potato Growers Ass'n, Manton, Mich.

1914 SEED CORN Yellow Dent. Our test 100% germination. \$1.00 per crate. New grain bags 25c. JULIUS STEFFEN, Six Lakes, Mich.

Men and Women Earn \$3.00 to \$5.00 daily (all or part time) selling Imported Rugs. Sample prepaid for \$1.00. Address: O. VAN LOON, 1428 Mack Avenue, Detroit, Mich.





FARM correspondents write that their hens are paying that—and more. The secret is scientific feeding. "Red Comb Means Health." Red Comb poultry feeds develop big layers—market birds, show birds. Cheaper to feed than to mix materials yourself. Sell your grain—buy Red Comb. Write for free book "Feeding Poultry for Profit." Written by six famous poultry experts.

**EDWARDS & LOOMIS CO.**  
Mfrs. of Famous Red Horn Line of Dairy Feeds  
344-G N. Elizabeth St., Chicago, Ill.

## Big Cash Profits

Every Week on Chicks. Write me for details showing how beginners with Belle City outfits make \$10 to \$25 a week on day-old chicks. Get the facts! Any man, woman, boy or girl can do it by following my plan and using my

**25 TIMES**  
**World's Champion**  
**Belle City**  
**Incubator** 402,000 in use. Get the whole story told by the Championship Winners in my big free book "Hatching Facts." With book comes full description of incubator and brooder—my 10-year money-back guarantee—low prices—full particulars—send me \$1.50. **Cold Offers.** Learn how I paid one user \$156, another \$50, many from \$45 down. Write me today for Free Book. Jim Rohan, Pres.  
**Belle City Incubator Co.**  
Box 14, Racine, Wis.

**Ironclad WINS**  
**In 2 Biggest HATCHING CONTESTS Ever Held**  
**140 Egg Incubator } BOTH \$10**  
**Chick Brooder }**  
If ordered together. 30 days Freight trial, 10-year Guarantee. Order direct from this advertisement—money back if not satisfied. Ironclad Incubator is covered with galvanized iron, triple walls, copper tank, nursery egg tester. Set up ready to run. The Brooder is roomy and well made. Send for free catalogue.  
**Ironclad Incubator Co.**  
Box 117, Racine, Wis. (3)

**AMERICAN POULTRY JOURNAL**  
**GET IT** Tells everything about the fascinating and profitable poultry industry. Issued monthly; 10 cents. We want you to know how good it is and will send it 6 months for 25c. Order now.  
A. P. J. 1337-542 S. Dearborn, Chicago, Ill.

### POULTRY.

**BARRED PLYMOUTH ROCK EGGS** from full blood stock, \$1.50 per 15. Have won at leading shows for years. J. A. BARNUM, Union City, Michigan.

**YOU ARE LOOKING FOR BABY CHICKS.** We give you good quality for your money in both chicks and hatching eggs from a standard-bred strain of winter-layers. Winners at Kalamazoo, Battle Creek and Jackson. S. C. R. I. Red-Bred for business and for beauty. (Send for price list.) Babcock & Son, B. No. 4, Box 180, Battle Creek, Michigan.

**Baby Chicks** from our own Bred-To-Lay Ringlet Barred Rocks \$10; or 100 S. C. White Leghorns \$10 per 100 and S. C. Buff Orpingtons \$12 per 100. Hatching Eggs carefully packed \$4 per 100. For further information write for our Chick Folder. **RUSSELL POULTRY RANCH, PETERSBURG, MICH.**

**BABY CHICKS FROM STANDARD BRED S. C. White and Brown Leghorns**, bred to lay large white eggs. \$9.00 per 100; \$55.00 per 1000. Safe arrival guaranteed. Catalog free. Wolverine Hatchery, Box 2221, Zeeland, Mich.

## Choice Barred Cockerels

MICHELSON strain \$1.50 each until sold.

## HILLCREST FARM - Kalamazoo, Mich.

**Cousins Northern King Strain** Barred Plymouth Rocks. Have won many prizes. Some nice Cockerels and Pullets for sale. Write for prices. David W. Cousins, Northport, Mich.

**BARRED Rocks Parks 200 Egg Strain** with records to 230 eggs a year—\$1.50 per 15 Delivered. By Parcel post. Fred Astling, Constantine, Mich.

**BARRED ROCK EGGS** and Baby Chicks from sturdy vigorous stock. W. C. Coffman, R. 3, Benton Harbor, Mich.

**BARRED Plymouth Rocks** bred to lay and exhibit. Buy your eggs from trapped birds. Our birds lay 50 per cent. all winter. Eggs \$2.00 per 15 from our best pens. Boswell Bros. Lincoln Lake Poultry Farm, Box 74, Ludington, Mich.

**Chicks that Live \$15 per 100.** Silver, White and Partridge Wyandottes. White Leghorn Chicks \$12 per 100. Pekin and Rouen Ducklings 25 cents each. **ALDHAM POULTRY FARM, R. No. 37, Phoenixville, Pa.**

**Prize Pen Bred-to-Lay** B. P. R. 13 eggs \$3.00; Utility \$1.00—13. Pine Knoll, Box 391, Shelby, Oceana Co., Mich.

**JOHN'S** Big, beautiful, hen-hatched Barred Rocks. Eggs, 30, \$2.50; 100, \$7.00. Select matings 15, \$4; 30, \$7.00, all postpaid. Photos. Circulars. John Northon, Clare, Mich.

**CHICKS.** We ship thousands each season. Ten varieties. Ancona's \$11 a hundred, free booklet. Freeport Hatchery, Box 12, Freeport, Mich.

# Essentials of Chick Feeding

I HAVE found that overfeeding is the cause of more trouble in the raising of chicks than underfeeding. The amount and kind of feed a chick should receive, and does receive, plays a very great part in the success in rearing it to an age of usefulness.

Young chickens should be fed from three to five times a day. When we have plenty of time, we can grow them quicker on five times a day than on three, but care must be exercised that they are not fed more than will satisfy their appetites and keep them exercising, except for the evening meal when they should be given all they will eat.

It seems necessary several times each spring to call to the attention of farmers the evil of feeding chicks before they are 36 to 48 hours old. The first feed may contain either hard-boiled eggs, cut fine johnnycake, stale (not moldy) bread, pinhead oat meal, or rolled oats, which feeds all contain the proper proportion of body-building elements to form a desirable first ration.

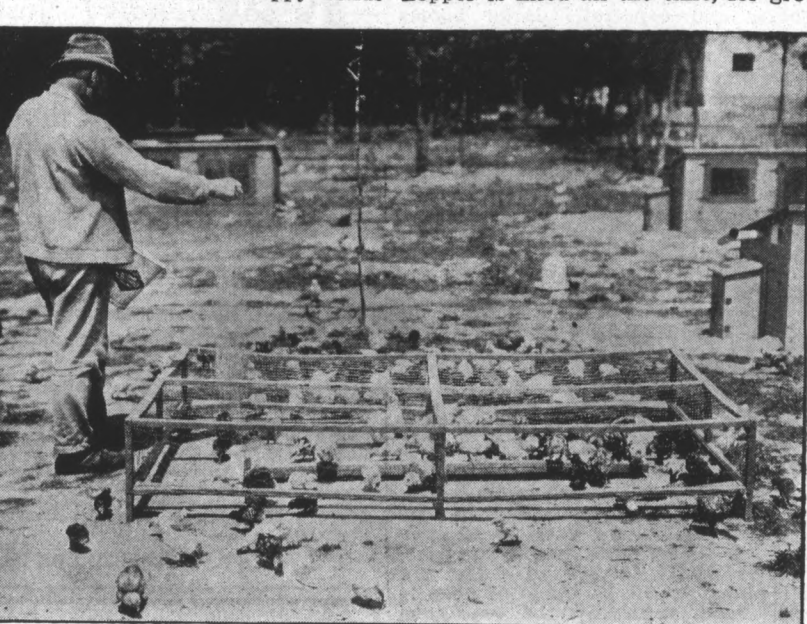
### Milk Good for Chicks.

All mashes fed for the first few days should be mixed with milk, for sweet skim-milk is a valuable food in giving the chickens a good start in life, but this mixture should be fed in a crumbly mass and not in a sloppy condi-

tion. By taking care to keep the food from getting dirty for the first few days, we can soon teach the little fellows to eat only clean food.

When the chicks are ten days old a good growing mash is necessary for best results. This may be composed of two parts (by weight) of bran, two parts middlings, one part corn meal, one part low-grade wheat flour, and 10 per cent sifted beef scrap of best and freshest kind procurable. This ration should be fed dry in a hopper left before the chicks at all times, or it may be fed moistened with milk.

After the tenth day, bury a peck of chick feed, finely ground, in the litter for every 100 chicks. This feed can be purchased of any reliable grain dealer. By burying it in the litter, less time will be needed for feeding, and with the dry mash hopper filled, and fresh water three times a day, the chicks will develop fast.



Proper Chick Feeding is Necessary to Produce Profitable Hens.

ing chicks will consume a large amount of beef scrap every day. I believe in feeding beef scrap after the chicks are ten days old, although I have seen men feed it from the very start.

If you confine the chicks to small runways, be sure to have a good supply of green food, such as lettuce, sprouted oats, alfalfa, or clover. But farmers should give the chicks a good range, where they may scratch among the grasses and consume large amounts of bugs and beetles, and where green food in its natural and fresh state is abundant. Fine charcoal, grit, and oyster shell should be kept before the chickens at all times, and cracked or ground bone may be fed where the chickens are kept in bare small yards, but this is not necessary with range stock.

New York.

E. W. GAGE.

### AN INCUBATOR CHART.

**Another Method of Feeding.** Johnnycake composed of the following ingredients in the proportions named is a very good feed for newly hatched chicks: One dozen infertile eggs or one pound of sifted beef scrap to 10 pounds of corn meal; add enough milk to make a pasty mash, and one tablespoonful of baking soda. This mixture should be fed five times daily for the first week, then gradually substitute a mixture of finely cracked grains consisting of cracked wheat, finely cracked corn, and pinhead oat meal or hulled oats, equal parts by weight, to

done on that day. This will include cooling and turning the eggs, adding water if it is a hot water machine, reversing the trays, trimming lamp, etc. Pin this schedule near the incubator and look at it every day. By the third hatch you will have learned what to do without reading your chart, but at the beginning such a plan may save rather costly mistakes.

Ingham Co.

R. G. KIRBY.

### ROUP.

Will you please tell me what to do for my chickens? They seem to have a cold; some go blind in both eyes, and others froth at the mouth, and just stand and gasp. Some only go blind in one eye. They don't have much of an appetite.

Branch Co.

SUBSCRIBER.

If only a few of your hens have the above symptoms and the trouble does not seem to spread much, it is undoubtedly just a common cold or catarrh which is attacking your chickens. But if a number of chickens have it and others are getting it the disease is roup or contagious catarrh. The symptoms of colds and the early stages of roup are similar.

The course of roup is usually of long duration. The putrid discharges may stop in three or four weeks and false membranes appear, but generally the symptoms last for months. Cold damp weather usually intensifies the trouble.

To control the disease isolate all birds which show any indication of the trouble. Disinfect the houses and yards with a five per cent solution of carbolic acid. Before disinfecting the houses remove all litter and then thoroughly spray the entire coop. Use permanganate of potash in the drinking water, using one or two teaspoons of a saturated solution to ten gallons of water. Burn or bury deep all birds dead from the disease. See that the coop is dry and free from drafts and frequently clean the drinking water receptacles. Give nothing but fresh clean food and provide plenty of bran and green food.

### BROOD COOPS.

Those who desire to make a success of raising chicks with hens must now soon meet the problem of how to keep them comfortable during the day and safe at night. It is not very satisfactory to wait until the hens hatch, then start out to hunt up coops. At our place on stormy early spring days, when it is too bad for the men to work outside we have them make chicken coops. A handy man can make a number of serviceable coops in a short time at small cost; we make coops that give good service for several seasons out of store boxes and old lumber.

The coops we have found most satisfactory are made with floors and tops separate from the coops, both fastened on with small hooks. These coops are handy to clean, easy to peep in at the tops when necessary, and when we don't need the floors we don't have to use them. In the summer is the only time we do not use them. Where rats are bad the floors are a protection and in the spring good tight board floors help to keep the chicks dry and warm.

However coops are constructed we want them roomy enough so the hens and chicks can have room to exercise when shut in as they must be to keep the chicks alive in spring during cool, rainy weather. Wire netting over openings keeps prowlers from chicks, and muslin over netting admits fresh air and light while the weather is yet cool. Muslin may be removed later when more air is needed.

It is such a help to have good fitting hinged or slide doors. Hinges cost little and small hooks to hold doors in place are not expensive, and these little things enable us to shut up the chicks at night quickly and securely. Hooded coops with roof and sides extending about 12 or 14 inches from the front help to protect the chicks from



wind, rain and sun. Coops made from light boxes are easily upset by a high wind; this may be prevented by placing a flat stone on top. One thing we like about the light coops, they are easily moved from place to place.

Indiana.

FRANCES WOOD.

## SECRETS OF THE GOOD HATCH.

It is known that vigorous foundation stock must be had before we can get a good hatch. Given that it is largely a matter of attention to detail. While an old hen will steal her nest and hatch out every egg, it is indeed unusual to have a hen duplicate the feat when she is set carefully on the picked setting of eggs. With hen hatching it is of little use to try to do much before April. What few hens become broody during February and March are usually set down. In April comes the rush. Success with hens depends on getting good motherly birds. No year-old pullets are used if we can get old hens. Prepare good clean nests and set the hens in secluded places. The mother birds will gladly do the rest. However, we usually test out the eggs and remove the infertile ones if a number of hens are set at the same time, and perhaps return one of the birds to laying duty.

With the incubator the case is differ-

ent. In the first place be sure you understand the mechanism of it. Know the why of every part before you put in the eggs. Also study the printed directions for running it that came with the machine. If you have a new one, do not try to run it like the old one or the way someone told you, but just according to rules. It is pretty certain that the maker of the incubator knows how to run his machine better than anybody else. Set the heat in motion and run the incubator for 24 hours before putting in the eggs. This will give time to find out any irregularities of arrangement. When everything is running smoothly put in the eggs. If these have been obtained from a distance they should be allowed 12 to 24 hours in which to "settle," and give the delicate germ opportunity to adjust itself.

A frequent cause for dead chicks is the cooling and turning. In no particular should one be more careful to follow instructions. The only thing that need be done for the old hen is to feed and water her every morning. The incubator also needs oil for heat and water for moisture. Unlike the hen the machine must have daily attention. The faithful biddy can readily prolong her fast to 48 hours if necessary.

New Hamp.

C. H. CHESLEY.

## Success with Poultry

AT the present time I am getting more eggs than I ever gathered before at this time of year, and for the first time in my poultry experience, my hens have been kept in the coop since the middle of November, never once setting foot outside.

They are kept busy a greater part of the time, as I scatter their grain in deep litter at night, taking a fork and stirring the litter up well and when Mrs. Hen decides it is breakfast time she has to dig for it.

As early as possible I fill up the water jars with hot water, also set a jar of milk on the table beside the water and when Biddy is dry, she jumps up and gets her drink and then jumps down again. Jumping is fine exercise.

Every time I enter the coop I throw down a handful of something and as I visit the coop quite often during the day this helps to keep them active.

They get a hot mash between eleven and twelve, and always have some clover or green stuff to pick at in the morning. Whenever the ground is bare I throw in several pieces of sod and it is truly a pleasure to see the hens go after them.

Oyster shell and grit are within reach at all times and at three-thirty they get more hot water and all the corn they care to shell for themselves. I never break up the ears as it is fine exercise for them to shell their own corn.

I gather the eggs early and often as I think the egg-eating habit is formed by the hens getting an occasional broken egg.

I always feed a meat food in the mash and am never troubled with feather eaters.

At night when I go out to scatter the grain for morning, I hold up the lantern and look the fowls over to see if I can detect any sick ones. A swollen eye, or a bit of foam in the eye would spell isolation for the afflicted bird at once, but as yet I have found nothing worse than a cold, which was detected by the bird's wheezy breathing. These quickly succumbed to the light mash food for three days' treatment, along with a good dose of salts and red pepper given the first thing, as soon as the victim was discovered. I consider the axe the best remedy for serious contagious diseases and cleanliness and frequent disinfection of the quarters as the best ways to prevent them.

I find it best to clean the droppings-boards as early as possible in the morning, as this drives the lazy birds off the roost. Sanding the boards well

every two or three weeks makes them easier to clean and if the slightly soiled litter off the floor of the coop is used on them, the hens will not bother so much by scratching it over.

I find that a hen will do for you only as much accordingly as you do for her, and if you wish her to hustle, you will have to hustle too.

Success in the poultry business is spelled w-o-r-k, and in capital letters at that.

MRS. M. KENNEDY.

## CLEANLINESS ESSENTIAL ABOUT THE POULTRY PLANT.

It is a very important matter that the poultry house be kept clean and whitewashed occasionally and in cleaning up the plant we must not forget the boxes and nests as they harbor more lice than any other part of the building. I am sure you will agree with me that a great deal of trouble and loss among the flock is usually traced back to the lack of cleanliness. Entirely too many people seem to have the impression that cleaning out the poultry plant two or three times a year is quite sufficient, and if I might add, constitutes poultry cleanliness. Now this is a sad mistake. I try to clean our plant once a month and oftener during the winter months. There is little danger of cleaning the plant too often, but there is a great deal of danger, and dissatisfaction arises if the plant is neglected.

It is not only a matter of keeping the poultry house free from lice and vermin, neat and sanitary at all times, but aside from this if we want a good healthy, vigorous flock we must use a little judgment. The dropping boards must be removed almost weekly and cleaned, especially in a small, closed house, if we want to keep the flock in first-class condition.

Other things of importance, if we want to be successful in this work, is to supply plenty of good feed, a variety for the winter layers, this includes green feed, of course, and plenty of pure drinking water at all times. It is a good thing to remember that much of the eggs, as well as the flesh of the fowls, is water, and that all their food must be greatly diluted before it can possibly be assimilated by the fowl's system. The more water the fowls drink the better it will be for them. They will keep in a healthier condition and are likely to produce more eggs, providing they have other similar advantages, such as a variety of good feed, etc.

H. W. SPOPE.



## Old Buildings Made Like NEW

Just because a building is dilapidated and badly in need of repairs is no reason why it should be destroyed.

Neither should it be allowed to stand in that condition.

Every building on your farm should be in perfect condition so you can get the most use out of it and so it will add to the appearance and value of your property.

You can do all this easily and cheaply—make every old building just as good as new—and so it will last for years to come, by using:

### Globe

METAL PRODUCTS

Roofings, Sidings, Cluster Shingles, Silos,  
Garages, Culverts, Rat-Proof Corn Crib  
and other interior and exterior uses.

And it doesn't take much time either to put on a new roof and sidings; to erect a silo and rat proof corn crib—to make old buildings just like new, when you use "Globe Brand" sheet metal products.

But be sure you get "Globe Brand" sheet metal products. They are the standard of quality by which all others are judged.

Make sure of what you're getting, by wiring to us now—this minute—for our 1916 catalog and the Globe Handy Memo Book. Learn just how you can save money by using "Globe Brand" sheet metal products.

All information is free—absolutely. So is the Memo Book, which you find handy to use every day.

Mail Us This

The Globe Iron Roofing & Corrugating Co.  
207 Newport St., Cincinnati, Ohio

Send me your big 1916 Catalogue and Farmer's  
Handy Memo Book, FREE, prepaid.

NAME \_\_\_\_\_

TOWN \_\_\_\_\_

STATE \_\_\_\_\_ R.F.D. \_\_\_\_\_

**GLOBE**  
**CATALOG**  
**Encyclopedia**  
 On Roofing  
 Siding  
 and  
 Sheet  
 Metal  
 Building  
 Material  
**FREE**

**GLOBE**  
**Farmers'**  
**Handy**  
**Book**  
**FREE**

To introduce our goods we will send these three little labor-saving sanitary "Star" pans to any address in the United States for 25c, postpaid. They are made of heavy, rust-proof material and will fit any Mason jar.  
**SIMPLEX SUPPLY HOUSE, 23 Pontiac Bldg., Chicago, Ill.**  
 Send for catalogue describing our Feather Brooders, Automatic Feeders and other poultry appliances.

ALL 3 FOR 25c.  
 ORDER TODAY

**CHICKS**—S. C. W. Leghorns mated with Barron Cockerels, \$10 per 100. Snowflake Poultry Farm, Route 1, Grand Rapids, Mich.

**CHICKS** 7c and up. Barred Rock, Wyandottes, Leghorns, Minorcas, etc. Safe delivery guaranteed. Circular free. Reliable Hatchery, McAlisterville, Box 6 Fe.

**Eggs** for hatching—From pure bred White Plymouth Rocks, Pekin and White runner ducks. White African guineas. H. V. Hostetler, R. 1, St. Johns, Mich.

**EGGS**—S. C. W. Leghorn, good as offered. 15 eggs \$1.50, 30 eggs \$1.75. Catalog free. **M. MAYER, JR., Merrill, Mich.**

**EGGS** for hatching from pure bred White Plymouth Rocks and S. C. Buff Leghorns on free range. **Kietzlen & Webster, Bath, Mich.**

**Eggs from pure bred S. C. W. Leghorns 5c each** J. Melvin Reid, Glenwood Farm, Warren, Mich.

**Eggs for hatching.** White Rocks, Good Stock, \$5.00 from prize winning. \$2.50 per 100, \$1 per 15. Book orders early. Mrs. Elsie M. Robinson, Petersburg, Mich.

**Eggs and Baby Chicks** from pure bred R. and S. C. H. I. Reds. Two white guinea hens \$1.50 each. **O. E. HAWLEY, Ludington, Mich.**

**Fowler's Buff Rocks** a few choice Cockerels stock 7 to 9 lbs. according to age \$2 to \$5. Eggs \$1.50 for 15. **R. B. FOWLER, Hartford, Michigan.**

**IMPROVE your poultry.** My Young's strain S. C. White Leghorns great money makers. Strong, vigorous, free-range stock. Baby chicks \$8 per 100 and up. Satisfaction guaranteed. Free catalogue. W. Van Appledorn, Holland, Mich.

**LEGHORNS**—White, Brown, Buff, Black. Also Rocks, Reds, Anconas, Pekin Ducks, eggs, baby chicks. Prices reasonable. Circular free. Sunnybrook Poultry Farms, Hillsdale, Mich. Chas. G. Burroughs, Jr. Formerly Foreman University of Wis., Poultry Dept.

**ORPINGTONS**—White, Single-Comb. Strong, vigorous birds. Special prices. **M. E. THOMPSON, Redford, Mich.**

**Pine Crest White Orpingtons** Strong, vigorous birds best of egg strain, eggs after Feb. 1st., baby chicks later. **MRS. WILLIS ROUGH, Pine Crest Farm, Royal Oak, Michigan.**

**RHODE ISLAND REDS and PLYMOUTH ROCKS.** Males 5 to 12 lbs. according to age \$2 to \$5. P. R. hens weight 5 to 10 lbs., eggs 15 for \$1.00; 100, \$5; 120, \$6. Mammoth Bronze Tom Turkeys, 8 to 34 lbs. according to age \$6 to \$25, 10 eggs \$3. **A. E. CRANTON, Vassar, Mich.**

**R. I. Reds, Both Combs, Most Popular** strain in Eggs for hatching. Baby Chicks. Write for catalog. **INTERLAKES FARM, Box 39, Lawrence, Michigan.**

**Rose Comb Brown Leghorn & Mammoth Pekin Duck** Eggs \$1 per setting, \$5 per 100. W. China Geese 25 cents each. **CLAUDIA BETTS, Hillsdale, Mich.**

**Rose Comb Rhode Island Red Eggs,** dark colored matings \$1.50 per 15. Utility eggs, laying strain \$4 per 100. **MRS. T. A. ETTA, Richland, Michigan.**

**ROSE AND SINGLE COMB Rhode Island Reds** Eggs, per 15, \$1.50 by parcel post; from special pen, 20c each by express. Jennie Buell, Ann Arbor, Mich.

**Rock Cockerels:** Buff, Barred, Columbian, Partridge and Silver Pencilled, \$2.00 each. **Sheridan Poultry Yards, Sheridan, Michigan.**

**RHODE ISLAND WHITES** win at the National Egg Laying contest. Cold weather don't stop them. Eggs \$1.50, 2 settings, \$2.50. H. H. Jump, Jackson, Mich.

**Silver Golden** and White Wyandottes. First prize winners at Ionia. Choice cockerels reasonable. Send for circular. C. W. Browning, R. 2, Portland, Mich.

**BUFF LEGHORNS**—Cockerels, hens, pens or eggs. Anything you wish in Buff Leghorns. Great laying strains. **Dr. William Smith, Petersburg, Mich.**

**Ferris Leghorns**—200 Egg Strain—Eggs, chicks, 8 week-old pullets from hens with records up to 264 eggs. Prize winners at largest shows. Prompt shipment, prices low, quality guaranteed. White Leghorns are best for eggs. We raise thousands. Free catalog and price list gives particulars. Write for it now. **FERRIS LEGHORN FARM, 934 Union, Grand Rapids, Mich.**

**Heavy Winter Layers:**—Long, large bodied, S. G. W. Leghorns, Wyckoff strain. Eggs, \$1.50 per 15; \$4 per 50; \$7 per 100. **H. A. MAGOON, R. 5, Ann Arbor, Mich.**

**C. C. B. Minorcas Cockerels and Pullets.** Eggs, Pope S. strain. P. C. Bred Sows and fall pigs. Big type with quality. **R. W. MILLS, Saline, Mich.**

**S. C. White Leghorns,** vigorous bred to lay stock. Eggs, \$5.00 hundred—75c for 13, a few day old chicks, safe delivery and fertility guaranteed. **M. MALONEY, R. No. 1, Kalamazoo, Michigan.**

**S. C. WHITE LEGHORNS,** bred for size, shape, vigor, egg production. 14 years' experience breeding Leghorns. Hatching eggs \$4.50 per 100. Baby Chicks \$30 per 100. **A. O. HOWARD, Tecumseh, Mich.**

**TOM BARRON Strain White Leghorns.** Hatching Eggs 75c for 15. \$5.00 per 100. **C. W. GORDON, Fowlerville, Mich.**

**WHITE Wyandotte Eggs** from heavy winter layers, \$2.00 per 15, \$3.75 per 30, \$8.00 per 100. Superb stock. Eggday Poultry Ranch, Marshall, Mich.

**S. S. HAMBURG COCKERELS**—Have some beautiful birds at \$2 and \$1.50; are worth \$3; cannot last long at these prices. **RIVERVIEW FARM, R. 2, Vassar, Michigan.**

**SILVER WYANDOTTES**—Blue ribbon, Sweepstakes winners Cockerels, Pullets. Free mating list. Eggs \$1.25 up. Triangle Poultry Yards, J. H. Gettings, Hillsdale, Mich.

**White Wyandotte** Cock & Cockerels. Eggs \$1, \$2, \$3, per 15, \$4 per 50, \$7 per 100. **DAVID RAY, 202 Forest Ave., Ypsilanti, Michigan.**

**WYANDOTTE SALE.** Golden, Silvers, Buff, Columbian, Silverpencilled, Partridge, Black, White. Scores 92-95. Eggs \$2.00 setting. **Theron Duryea, Hillsdale, Mich.**

**WHITE WYANDOTTES,** Eggs \$1.50 per 15. \$2.50 per 30. \$7.00 per 100. From choice stock. **A. FRANKLIN SMITH, Ann Arbor, Michigan.**



## THE RAINY SEASON CONQUERED BY THE TOWER SYSTEM OF CORN CULTURE

Tower Cultivators went into the fields three days earlier than the shovels after a rain. Earlier maturity of the corn was the result.

V. H. Peck, Hull, Ill., writes: "We can use surface cultivators after a rain three days sooner than a shovel plow and do a better job."

H. L. Chapman, Jerseyville, Ill., writes: "It was a wet season—with your two-row Tower Cultivator; corn had only 3 plowings, but was remarkably clean."

Adams Co. Agric. Extension Ass'n, Decatur, Ind., reports:—"Tower Cultivator greatly increased the yield of corn per acre, even in an extremely wet season."

### Spares All Corn Roots



These Corn Roots within Five Inches of the Surface.

Each of the following extensive corn farms of Illinois use 25 to 50 Tower Cultivators: Ill. Canning Co. and Hoopeston Canning Co., both of Hoopeston, Ill.; Iroquois Canning Co., Onarga, Ill.; Bloomington Canning Co., Bloomington, Ill.; Chenoa Canning Co., Chenoa, Ill.; LeRoy Canning Co., LeRoy, Ill.—because they have proved the best.

Many thousands of farmers of the country use the "Tower" exclusively. Nearly every grower of Seed Corn uses the Tower System because it is proved the best known. Reader, be sure your Cultivator this season has the name "TOWER" on the tongue. Write us for free literature.

**J. D. TOWER & SONS CO.**

37th Avenue, Mendota, Illinois.  
(Original manufacturers of Surface Cultivators.)



## Successful Orcharding

is the result of successful tillage. Cultivate your trees as you would your corn—use an "Acme" Orchard Harrow. It gets in close under the branches. Cuts, slices, turns the soil twice, levels and compacts—all at one operation. Many sizes—extension and regular. Kills small weeds, cultivates deep, mulches thoroughly. Send for new free booklet—now.

**Duane H. Nash Inc.**

44 Elm Street, No. 23, Millington, New Jersey 61-2 ft. Wide



# \$15

95 UPWARD  
ON TRIAL  
Fully Guaranteed

## American CREAM SEPARATOR

**A SOLID PROPOSITION** to send new, well made, easy running, perfect skimming separator for \$15.95. Skims warm or cold milk making heavy or light cream. Bowl is a sanitary marvel, easily cleaned.

**ABSOLUTELY ON APPROVAL.** Gears thoroughly protected. Different from this picture, which illustrates our large capacity machines. Western orders filled from western points. Whether dairy is large or small write for handsome free catalog. Address:

**AMERICAN SEPARATOR CO.,** Box 3061, Bainbridge, N. Y.

**WRITE FOR**

**BROWN FENCE BARGAIN BOOK AND SAMPLE**

Over 25,000,000 rods Brown Fence already sold to 400,000 farmers. Factory Prices, Freight Prepaid. 150 styles, 13c per rod up. Gates and Steel Posts, too! Write postal.

**THE BROWN FENCE & WIRE CO.,** Dept. 49, Cleveland, Ohio

**Penny Postal Brings Book of Fence Facts**

Before you buy any fence, get this valuable book.

**Empire Fence**

Big No. 9 wires, open heart steel heavily galvanized.

**Bond Steel Post Co.**

Direct from factory—freight prepaid. Save dealer profits.

Thousands write that it outlasts everything else.

16 E. Maumee St., Adrian, Mich.

# Practical Science.

## THE SOURCE OF MATERIALS IN FERTILIZERS.

BY FLOYD W. ROBISON.

When commercial fertilizers were first introduced the nitrogen content was satisfied by securing materials containing nitrogen from every source. Analytical methods were not sufficiently developed to make it feasible to inquire into the class of materials used to furnish the nitrogen. Consequently chemists soon found that manufacturers were using such materials as finely granulated hoofs, horn, and also finely chopped leather to furnish the nitrogen content. These were the scrap materials from slaughter houses and together with the hair from the animal carcass constituted a considerable portion of the material which thus far had gone to waste.

With the advent of the commercial fertilizers, however, manufacturers began to hope that in this way this scrap material could be utilized. Consequently many fertilizers contained a considerable portion of their nitrogen content in the form of this unreduced and but very slowly available nitrogenous material.

### A Product May Contain Much Nitrogen, yet be a Poor Fertilizer.

The horns and hoofs of animals, the hair and the skin, which is the source of leather, contain a considerable amount of nitrogen. This material might be considered to be a typical proteid compound for an analysis of hair shows it to contain nitrogen in very much the same percentage as does ordinary proteid material. The same might be said of horns, hoofs and leather scraps so that from the standpoint of the total nitrogen content no criticism could be raised as to the nitrogen content of the fertilizer in question. But these materials are of value to vegetation only as they decompose and their nitrogen becomes liberated or combined in soluble form. Hoofs, horns, hair and leather scraps will resist decomposition for long periods of time and therefore it was found necessary to separate the nitrogen of the fertilizers into these soluble, almost inert, forms and the other more readily soluble and more immediately available types. Since inquiry was made into the source of the raw material in this respect, manufacturers have found it impossible to sell such materials in fertilizers and now they are treated either by digestion with acid or by some other form of treatment which puts the nitrogenous material into a soluble form.

### All Sources of Phosphoric Acid Not Equally Valuable.

With respect to phosphoric acid, the demand is fully as urgent as with nitrogen, although perhaps the variety of sources is not so great. We know, for instance, that although the phosphoric acid in bones under certain conditions is a very desirable type of phosphoric acid for fertilizers, one condition which must be met before the phosphoric acid in bones can be of any service in soils is that the same be permitted to disintegrate. This disintegration is promoted first by the fine grinding of the bones. A pile of bones which are not ground will resist decomposition for centuries. The same bones brought to a powdered state will begin at once to furnish a portion of their phosphoric acid to vegetation. If the bones are green, whereby there is a considerable amount of nitrogenous matter contained in them, the fine grinding permits of a much more rapid utilization of the phosphoric acid content through the effect of the decomposition of the nitrogenous matter and its solvent influence upon the phosphoric acid.

### The Term Bone Phosphate of Lime Means Little Nowadays.

So-called bone phosphate of lime is of no more consequence in a fertilizer than the phosphate of lime found in ground rock except that it is assumed that when bone phosphate of lime is mentioned in a fertilizer the phosphoric acid content is stepped up in value because of the fact that it is associated with nitrogenous and organic matter at the same time from the bone, the decomposition of which in the soil liberates materials which in turn, so freely liberated, begin at once to attack the lime phosphate of the bone. This is why we have advised repeatedly the use of ground phosphate rock as an absorbent in stables because we try to promote in the ground rock a condition similar to that which nature provides in the bone itself.

It is erroneous and misleading for a fertilizer concern to advertise its phosphoric acid as bone phosphate of lime or equivalent to bone phosphate of lime unless it is bone phosphate of lime or at least unless its phosphoric acid is associated with organic matter fully as intimately as is the case with ground bone.

### Burned Bone Not so Good as Green or Raw Bone.

Bones which have been burned exhibit their phosphoric acid largely in the same condition that exists in phosphate rock and in burning bones the immediate availability of their phosphoric acid has been largely destroyed.

Some fertilizer concerns have put upon the market a steamed bone meal. We have considered the phosphoric acid in steamed bone meal to be of a high type of availability and consequently we have conceded a higher price for its phosphoric acid than with raw phosphate rock.

The use of acid phosphates whereby the ground rock is attacked by sulphuric acid which combines with a portion of its lime furnishing calcium sulphate and what may be called a soluble and reverted phosphate is another form of high type phosphoric acid product. In vegetable matter the phosphoric acid is considered to be available in spite of the fact that it frequently exists in the tricalcic phosphate form, but in vegetable matter it is associated with organic matter and such association we have mentioned before repeatedly is an advantageous one.

### Raw Rock Phosphate is the Most Slowly Available Form.

Raw phosphate rock is probably the least available form of phosphoric acid we have, but the availability of the phosphoric acid in rock is materially influenced by the fineness of division. So it becomes important for the farmer to know the sources of materials which go to make up the phosphoric acid content of the fertilizer. In lieu of this he should know the water-soluble content or the amount of phosphoric acid soluble in such a solution as citrate of ammonia and the amount which is totally insoluble in either reagent.

### What About Potash?

Probably the question of availability or the sources of the raw material is of greater import with the potash constituent of fertilizers than either nitrogen or phosphoric acid. We have been confronted in the last two years with a virtual famine in potash because of the stopping of imports from practically the only available source of soluble potash salts in the world, that is, the German Empire. The world is not destitute of potash for every country has potash in some form, but with the almost total exception of the soluble salts which have been produced in the Stassfurt salt mines in Germany

the potash of the universe seems locked in well-nigh commercially invulnerable vaults. This country has an abundance of potash but it exists in an insoluble form and while nature undoubtedly, through the influence of vegetation, year after year does draw upon, in some degree, the insoluble potash salts of the soil, still we know that the form in which this potash exists in most soils does not lend itself readily to intensive agriculture. It is a wise provision of nature, no doubt, for it insures a permanent agriculture, but so fascinated have we become with the idea of stimulated soil productivity with the use of artificial manures, and so fascinating have been the possibilities of making crops grow to commercial advantage that we have not been satisfied with the old, time-consuming, natural method.

### Water Soluble Potash Absolutely Indispensable.

The discovery of these potassium salts which were soluble in water has affected materially the demand on the fertilizer industry, and now that this market is temporarily shut off and potash has risen in price to as much as \$500 per ton, without any stock to supply, farmers have wondered what they could do to prevent a decrease in soil productivity due to this one factor alone. We think it has its compensating advantages for farmers should begin to realize that economic agriculture depends upon a utilization of all materials which they have at hand upon every farm, that they cannot afford to go into the markets and buy the fertilizer which contains potash in the same form in which it exists in practically all soils.

We therefore give consideration in valuing a fertilizer not to the total potash content in the fertilizer, but to the amount of potash which may be leached out through the agency of water. We say, therefore, water-soluble potash is the type of material which must be furnished in fertilizers and that form now limits it to the sulphates of potassium, muriates of potassium, nitrate of potassium or carbonate of potassium. In wood ashes it exists largely in the form of carbonate of potassium. In the German salts it exists in the form of chlorides, or muriate of potassium.

To recapitulate briefly, we give the highest value in fertilizers to all those ingredients which furnish the nitrogen in water-soluble form; the phosphoric acid in water-soluble form; and the potash in water-soluble form. These forms of nitrogen are nitrate of soda, nitrate of potash and sulphate of ammonia. In phosphoric acid it is acidified bone. In potash we give consideration only to the form of potash which is soluble in water and this means carbonate, chloride or sulphate of potassium.

The secondary form, or the next in value, in nitrogenous fertilizers is such substances as tankage, dried blood, raw or steamed bone, acidulated products and the like, and the least value of all to those products such as hoofs, horns, hair, scraps of leather, and other forms of nitrogenous fertilizers which do not decompose except after prolonged intervals of time have elapsed. In the case of phosphoric acid it is the raw phosphate rock or burned bones; in the case of the potash ingredient, it would, of course, be the silicate. And a sufficient amount of these insoluble potash compounds exists in practically every soil so that there is no excuse whatsoever for their employment in fertilizers.

Does it pay to plow ground for oats? The Ohio Station says that farmers are frequently misled by such practices. Six years' results at the state experiment station show that disked land has given greater yields than plowed soil, and the cost of preparing the seed bed has been much less. The only objection to diskings is on land where weeds are unusually abundant or on exceptionally heavy soil.



## Grange.

Our Motto:—"The farmer is of more consequence than the farm, and should be first improved."

### THE GRANGE IN CO-OPERATIVE SELLING.

A special committee of State Grange executive committee has been named to outline a plan for the operation of co-operative organizations within the Order, and Hon. George B. Horton has been chosen chairman of that committee. A report of much importance is looked for at the April meeting of the executive committee.

I am telling the story now because I want to get the matter before the readers of this paper in time for them to be thinking about it a little in advance, before the pressure of spring's work shall have taken all the time and left little opportunity for thought outside of the regular work of the farm.

The plan of the sub-committee will provide for live stock shipping associations, organizations for the marketing which shall be found possible within the scope of the membership of any Grange, or combination of Granges.

At first it may seem that to limit the organization of any co-operative society to members of the Grange would be to confine it within too small limits, but it is hoped that there are many Granges in the state large enough to support such societies within their own membership and where the number of members in a single Grange is not sufficient, two or more Granges can unite in one organization.

In Calhoun and Genesee counties co-operative live stock shipping associations have been running for some time with marked success, and as we have gone about the state during the winter, we have noted much interest in this somewhat new feature of co-operation.

In fact, the whole field of co-operative marketing is challenging the attention of the public as never before. The people are demanding these organizations. For the most part, they are without experience and if they enter upon this new work without thorough, business-like organization, and experienced leadership, the result will be failure in a large number of cases. Our committee realizes this and is giving careful thought to the work in hand.

As soon as the report is finished and adopted by the executive committee, it will be given to the press of the state for publication. It is hoped that the entire plan will be widely discussed, and that wherever the membership of a Grange, or of adjacent Granges is sufficiently large, there will be an effort to get something definite out of this new line of Grange endeavor.

We are hoping that this new plan will include an arrangement for some sort of supervision of co-operative companies. Failures often result on account of some little matter that might be easily remedied if only someone of experience were on hand to give a little much needed help just at the right time.

For example, in the management of co-operative creameries difficulties often arise—sometimes because of poor butter, or perhaps on account of variations in the test of cream, or from some other cause not understood by the patrons, which a competent creamery man could find and remedy with little difficulty.

As time goes on, and the number of co-operative enterprises in the state shall increase, there will come the urgent need of just the right man on hand when the company runs up against a troublesome condition that is beyond the wisdom of the local management.

But first of all, do we need a uni-

## Farmers' Clubs

### OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—R. J. Robb, Mason.  
Vice-president—C. B. Scully, Almont.  
Secretary and Treasurer—Mrs. J. S. Brown, Howell.  
Directors—Alfred Allen, Mason; C. T. Hainline, Alma; W. K. Crafts, Grass Lake; Edward Burke, St. Johns; Mrs. C. J. Reed, Spring Arbor; Roy E. Moore, Bellevue.

Address all communications relative to the organization of new Clubs to Mrs. J. S. Brown, Howell, Mich.

#### Associational Motto:

"The skillful hand with cultured mind is the farmer's most valuable asset."

#### Associational Sentiment:

"The Farmer: He garners from the soil the primal wealth of nations."

#### CLUB DISCUSSIONS.

**Adopt "Dry" Resolution.**—The Wise Farmers' Club met for their March meeting with Dr. and Mrs. Reeder, in the city of Clare, at 11:00 a. m. Meeting was called to order by W. J. Jennings, president. Song by the Club, "America." Prayer by Rev. Bennett. Address of welcome by Dr. Reeuer. Response by Secretary E. F. Wilt, after which all did justice to a good dinner. The Club then voted to make the Rev. Bennett and wife, and the Rev. Dibble honorary members of the Club. "The possibilities of a canning factory in Clare, was the question of the day, opened by a paper by Mrs. John Duncan and followed by talks by Messdames Wilson and Lansing, and Messrs. Wilt, Jennings, Perry, Seeley, Reeder and Tatman, all expressing themselves in favor of the proposition except one. Clare has fine railroad facilities for a factory, has No. 1 land for raising beans and peas, can produce as fine apples as any part of the state. The next question, "How plants grow," was opened by Miss Johnson; "How plants are reproduced," by Dr. Reeder; "Proper selection of Seed," by Prof. Hornberger, all of whom gave good talks. Club adjourned to meet with Mr. and Mrs. John Duncan in April.

The following anti-saloon resolution was unanimously adopted by the Club: "We, the Wise Farmers' Club, consisting of farmers of Northern Isabella and Southern Clare Counties, wish to express ourselves regarding the published statement made last week by the Clare County Home Rule Club, a whiskey organization under the guise of farmers and business men. We believe such statements made by such organization to the citizens of Clare county is an insult to every farmer in the county and the Farmers' Clubs throughout the state are opposed to a unit to the existence of the saloon. We recommend that the above resolution be adopted and made a part of the records of the Club, and also published in the local newspapers."—J. H. Seeley, Cor. Sec.

form system of book-keeping for co-operative organizations? It often happens that these companies get into sore trouble about money matters. The secretary can not show where the money has gone, and yet no one appears to have it.

It is a serious matter indeed when a man who has been respected by his neighbors for half a lifetime or longer, does not know or can not tell what is needed to know about the company of which he is secretary, and is suspected of dishonesty by his neighbors.

If people who have little or no business experience are going into business, and are to succeed, the way must be made just as easy as possible. In the accomplishment of this, the general public is interested. People are entering the great field of co-operative work not simply for personal advantage, but because they believe it to be for the interest of producer and consumer alike. In this great work, the Grange will ever do its part and more, but the state should help. Every organization should co-operate with the state so far as it is possible, to help solve this great problem in the interest of all.

W. F. TAYLOR.



### 100,000 Farms run on his Schedule

Put your early rising problems in Big Ben's hands—just tell him what time in the morning you want to get things stirring around your place.

He's calling time and keeping time now for five million families—more than a hundred thousand of them live on farms.

#### Western Clock Co.

La Salle, Ill., U.S.A.

Makers of Westclox

### EDWIN FARMER, President



The Citizens' Mutual Automobile Insurance Company, of Howell, is now started on its second year of successful operation. Edwin Farmer, of Stockbridge, President, is a prominent farmer and well known throughout the state, as he was a member of the legislature for four terms.

The Company now has an active agency force and a large number of successful farmers in all parts of the state are insured in it. The Company followed the plan of all successful mutual companies in organizing in the fall after the heavy losses of the season were over; starting September 1st the Company has obtained about twenty-five hundred members and therefore is a strong organization with a good surplus fund, starting the spring campaign with everything in its favor. The officers of the Company have received many compliments for starting in this careful way, as the wise man realizes that organizing at the right time means success. The Company is now writing at the rate of five hundred per month, which will greatly increase as the farmers start driving their cars.

The policy protects your car anywhere in the United States or Canada against fire, theft, or liability, protecting you against the lawsuits brought against you, up to \$5,000.

The rate in stock companies on the average size car is about \$50. If you are not insured, look up this safe and reliable Company where you can get insurance at cost. Only \$1 policy fee and 25c per H. P. Write

W. E. ROBB, Secy., Citizens' Mutual Automobile Ins., Co., Howell, Mich.

**Before You Buy KNOW TRACTORS**  
Our course fits you at home to choose the right tractor, to operate and repair. Also autos, gas engines. Knowledge you and sons need. Take agency I. M. I. car and accessories and make money right away. Write for free books and free auto plan. International Motor Institute, 522 Koenig Bldg., Chicago

### Farms and Farm Lands For Sale

#### 120 Acres, \$2600

Central New York

8 cows, 50 hens, wagons and tools thrown in by owner anxious to make quick move to smaller place. Nice lot fruit; 1500 cords wood, 600 sugar maples; 2-story 8-room house, 40-foot barn, 2 poultry houses. Very easy terms to the right man. You can see on same trip a good 125-acre farm for \$1200, and one of 182 acres at \$5,000 that had an income of \$4,000 in year. For details see page 35 our big new Spring Catalog, just out, copy free; it is filled from cover to cover with live farm bargains everywhere. E. A. STROUT FARM AGENCY, Dept. 101, 150 Nassau St., New York City.

### McClure-Stevens Land Co.

Successors to A. J. Stevens & Co. Established 1883. Farm, Fruit and Stock Lands. We own 18,000 acres of choice unimproved land in Gladwin and Clare counties. Sold on easy payments. Interest 6 per cent. Write for information.

#### Gladwin, Michigan

### "ACRES OF OPPORTUNITIES"

An illustrated booklet FREE. Michigan has hundreds of thousands of acres of virgin land. \$5.00 an acre up. Healthful climate. Growing season for all crops. Ample rainfall. Write W. P. Hartman, A. & I. Agent, Room 314 Grand Rapids & Indiana Railway, Grand Rapids, Mich.

### New Land,

In Gladwin and Midland Counties, Michigan. Well located, low prices and easy terms. Staffed Bros. (owners), 15 Merrill Bldg., Saginaw, (westside), Mich.

**Dairy Farm** 1400 acres. Modern commodious barns. Milking machine, Cheese factory, 125 Holstein cattle, Horses, Oil tractor and implements included. Income \$1,300 per month.

Description and terms to interested parties. U. G. Reynolds, Gladwin, Mich.

**Farmers:** You can get more value for your money in farm property in Southern Michigan than any where in the United States. If interested write for free catalogue. **BYERS & BROWN, Coldwater, Michigan**

**257 ACRE STOCK FARM** on main road, all improvements. \$30 per acre. 100 others. Send for list. Neville Farm Agency, Phelps Bldg., Binghamton, New York

FARMS and unimproved lands on easy terms. Real bargains in any State. Send for our free magazine. Services free to buyers. **WESTERN SALES AGENCY, Minneapolis, Minn.**

**Southern Farms,** Mississippi, Arkansas, Tennessee. Send for booklet. **MARTIN & COLE, Memphis, Tenn.**

**Do You Need Farm Help?** We have many able-bodied young men, experienced and inexperienced, who want farm work. Ours being a philanthropic organization, our services are free to employer and employee. If you need good, steady, sober men, write to **JEWISH AGRICULTURAL SOCIETY, 712 W. 12th St., Chicago, Ill.**

**Wanted** A Practical farmer and hustler to take charge of 320 acre farm, 80 acres cleared. Married man preferred. Will pay \$50.00 per month to right man, furnish house and plot of ground. Address C. D. Hanchette, Hancock, Michigan.

**Wanted** for a farm 30 miles from Detroit a good live man who understands farming and be able to show results. Salary and profit sharing arrangement. Box 8-41, care of Michigan Farmer, Detroit, Mich.

**Tenant Wanted** for 80 acre farm 22 miles from Detroit, 1 1/2 miles from electric line. Good terms to right man. Must have implements and stock. Box C-41, care Michigan Farmer.

**Always mention the Michigan Farmer when writing to advertisers.**



## BREEDERS' DIRECTORY.

Change of Copy or Cancellations must reach us  
Ten Days before date of publication.

## SPECIAL NOTICE

## Registered Holstein Females for Sale.

Our present farm being more valuable for real estate than dairy farming, we are going to dispose of fifty females—mostly heifers and young cows. Some are sired by the great bull "Pledge Spoffard Calamity Paul" and many are in calf to him. We offer in this sale granddaughters of Pontiac Korndyke, Hengerveld De Kol, Pontiac Butter Boy, etc.

They are priced to sell. Absolutely no tuberculosis in herd.

An opportunity not often offered to buy this kind. Farm at foot of West Genesee Street and City Limits.

## ESPANORE FARM

LANSING MICHIGAN

CHASE S. OSBORN } Owners  
ADAM E. FERGUSON }

## CATTLE.

## ABERDEEN ANGUS

If you are in need of an extra good bull or a few choice young cows or heifers, we have them for sale. Our herd is headed by the Grand Champion Black Monarch 3rd. We invite you to come to our Farm and see them. They are bred right and priced right. U. L. Clark, Hunters Creek, Mich. Sidney Smith, Mgr.

## ABERDEEN-ANGUS

HERD ESTABLISHED IN 1900.  
TROYAN-ERICKAS and BLACKBIRDS only. Also breeders of Percheron, Hackney and Saddle Horses.

WOODCOTE STOCK FARM, Ionia, Mich.

Aberdeen Angus Four young bulls also young cows and heifers. Extra good. Priced reasonable. Inquire F. J. Wilber, Clio, Mich.

FOR SALE—14 Angus bulls 9 months and older, including our herd bull. Also a few cows and heifers. Geo. Hathaway & Son, Ovid, Mich.

AYRSHIRES—One of the foremost dairy breeds. The most economical milk producers. Calves for sale. White Lashora cockerels. Duroc Jersey swine. Michigan School for the Deaf, Flint, Michigan.

## VILLAGE FARMS, Incorporated

Grass Lake, Michigan,

GUERNSEY CATTLE  
BERKSHIRE HOGS

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM  
GUERNSEYS

No Tuberculosis Or Abortion

We are offering a number of fine Registered cows for sale. Some of these cows have finished their A. R. test and others soon will with records from 400 to 620 lbs. of fat in one year. We also have Reg. Bull calves from A. R. cows for sale, also one Bull old enough for service whose Dam's record is over 620 lbs. of fat as a 4½ year old.

## CAMPBELL &amp; ANGEVINE

Coldwater, Michigan.

GUERNSEYS—REGISTERED  
BULL CALVES

Containing blood of world champions. HICKS' GUERNSEY FARM, Saginaw, W. S., Mich.

Registered Guernsey Bull Calves for sale. May be bred. Address Clint Bishop, Watervliet, Mich.

VONDALE Guernsey bulls all sold. Sorry to disappoint those wishing stock. Only registered bull calves left. Avondale Stock Farm, Wayne, Mich.

Guernsey Bulls of service age and calves from choice. Adv. reg. breeding. T. V. HICKS, Route 1, Battle Creek, Mich.

Guernsey Bull Calf Six months old A. R. breeding. Also a good Collie dog. E. G. A. WIGENT, Watervliet, Mich.

Guernseys for sale from A. R. dams. 1 2-yr.-old bull and 3 bull calves. Geo. N. Crawford, Holton, Mich.

FOR SALE Reg. Guernsey bull calves, dams running in A. R. now. Cheap now, write JOHN EBELS, HOLLAND, MICH. R. No. 10.

AT Farmers' Prices Registered Guernsey Bull calves from A. R. dams and dams being tested. If interested write for photo, breeding and price. Byers & Barnes, Coldwater, Mich.

GUERNSEY Bull old enough for light service, a few good bull calves—all out of a Son Pauline Spottwood—A. R. O. 746 lbs. fat—prices reasonable. J. M. Williams, North Adams, Mich.

Do You Want A Bull?  
Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6½ fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

Duroc Jersey Boars and Sows  
BROOKWATERS' WINNING COMBINATION

Best Blood Lines. Individual Merit. Prices that will make you money.

This is our record, one which we shall maintain. Choice fall and spring pigs and mature stock. Send for our new circular and state your wants. Write or better come. If you wish one of the best young Jersey bulls in Michigan we have him for sale.

Brookwater Farm, Swine Dept., Ann Arbor, Mich.

## HOLSTEIN BREEDERS, ATTENTION!

We Finished 7 Day Records for 6 in February. The Records Were:

No. 1, 4 years, Milk 458.8; Butter 20.26 lbs.  
2, 7 years, Milk 586.7; Butter 30.08 lbs.  
3, 4 years, Milk 386.9; Butter 20.46 lbs.

Our herd sire is a son of Pontiac Aggie Korndyke and Friend Hengerveld DeKol Butter Boy (World record series). Every cow in herd has A. R. O. record. 5 Bulls ready for service. Get our booklet.

LONG BEACH FARM, Augusta, Mich.

## Herefords—3 Bull Calves

ALLEN BROS. PAW PAW, MICH

Purebred Registered  
HOLSTEIN  
CATTLE

Holsteins, the best dual purpose breed. Dr. C. H. Eckles, of the University of Missouri, found Holsteins highly profitable, as do all who own them. He says, "Thirteen years ago I bought four Holstein cows. One was sold, so that all the cows we now have came from the other three. We have sold \$5,600 worth of blooded stock from the herd. In addition to that we have thirty-eight head of females on hand, worth at an estimated value of \$200 per head, \$7,600." Similar stories of success with Holsteins are really commonplace, so uniformly profitable is the purebred registered Holstein-Friesian breed. Investigate the big "Black and Whites." Send for FREE Illustrated Descriptive Booklets The Holstein-Friesian Association of America F. L. Houghton, Sec'y., Box 164, Brattleboro, Vt.

## FOR SALE

SOME VERY FINE YOUNG BULLS  
Whose sires have as high as 31 lbs. of butter behind them. As they are young, will make a low price on them. BIGELOW'S HOLSTEIN FARMS, BREEDSVILLE, MICH.

HATCH HERD  
YPSILANTI, MICHIGAN

Registered Holstein-Friesian sires, grandsons of World's greatest dairy sire, out of choice A. R. O. dams and King Pontiac Jewel Korndyke; Brother of K. P. Pontiac Lass 41.5; average record of 50 dams in his pedigree 31.25 in 7 days; average per cent of fat three nearest dams 4.37; of his own dam 4.33. Six in first three generations already have over 600 A. R. O. daughters. A few females bred to "King". Prices reasonable.

HOLSTEIN Bull Calf: Born Oct. 5. A splendid individual, well grown, and of choice breeding. Dam has A. R. O. record, butter 7 days 18.04 lbs. milk 419.8 as a 2-yr.-old. Sire Albina Bontie Butter Boy No. 93124. W. B. Reader, Howell, Mich.

For Sale: Big Holstein Bull 2 yr. old. Good breeding. Reg. bulls and heifers 10 mos. old. Ferd. J. Lange, Sebawing, Mich.

Choice Holstein Bulls. All from A. R. O. Dams. Semi-official yearly records 720 lbs. butter in 7 days. 4 yr. old class to over 1000 lbs. in mature class. Breeding: Cross "King of the Pontiacs" and the "Dennick blood." Cherry Creek Stock Farm, Hilliards, Mich. M. E. Parmelee, Proprietor.

ALFALFADALE HERD of Holsteins. Contains aged cows producing 32.94 lbs. of butter in 7 days; 4 yr. olds producing 31.76; 3 yr. olds producing 26.37 and 2 yr. olds 25.69 all officially tested. Sons and brothers of these high testing cows for sale. Geo. H. Gillespie & Son, Mason, Mich.

For Sale or to rent after June a ¾ brother to a 30 lb. jr. 4 yr. old. 6 nearest dams 28.51. 3 yr. olds have records above 20 lb. 28 nearest sires and dams all have A. R. O. daughters. M. L. McLaughlin, Redford, Mich.

I Have Holstein Bulls, Bull Calves and Cows. I can show breeding, records, individuality and attractive prices. L. E. CONNELL, Fayette, Ohio.

## "TOPNOTCH" Holsteins

By careful retention, for many years, of largest producing females, and use of superior sires, a breeding herd of wonderful quality has been established. We are selling young bulls of this "TOPNOTCH" quality, of serviceable age, at moderate prices. Information, pedigrees, etc., on application. McPHERSON FARMS CO., Howell, Michigan.

FOR SALE Registered Holstein Bulls ready for service, and bull calves, also females. FREEMAN J. FISHBECK, Howell, Michigan.

REGISTERED HOLSTEIN Heifer 4 months old. 12 cows with 30-lb. records in her pedigree. Mostly white, beautiful individual. \$100 delivered. Write for pedigree. Hobart W. Fay, Mason, Mich.

REG. Holstein Bull 5 mo. old. Dam 23.73 Butter dam of Flint Burtjusa Pauline 5.96 milk 28.51 Butter in 7 days at 2 years. Priced right. John A. Rinke, Warren, Mich.

FOR SALE—Registered Holsteins. One heifer 10 mos. old, also 3 bulls from 2 to 7 mos. old, sired by a 30 lb. Bull. Wm. GRIFFIN, R. No. 5, Howell, Mich.

Reg. Holstein Bull 5 mos. old. Dam made 546 lbs. milk marked and well grown. E. R. Cornell, Howell, Mich.

Only \$25 Delivered: Handsome Holstein bull 1½ yr. old, heavy milk, 2½ white, Sire 25 lb. butter bull. Dam, heavy milk, thoroughbred, not registered. Rougemont Farms, Detroit, Mich.

Ypsilanti Farms Offer, for quick sale, few choice bred Bull Calves at \$50 and \$75. Ypsilanti, Mich.

\$75 BUYS registered Holstein-Friesian bulls, ready for service. Best of breeding and good individuals. B. B. REAVEY, Akron, Mich.

## WANTED

Six good men to buy pure bred HOLSTEIN BULL CALVES. Good notes on a year's test accepted in payment. GEO. D. CLARKE, VASSAR, MICH.

\$45 Buys Registered Holstein bull 3 months old, whose 3 nearest dams averaged 25 lbs. butter 7 days. 3 registered cows and heifer very cheap. These combine the best blood lines. J. B. Armistead, Traverse City, Mich.

For Sale My entire herd of high grade Holstein Cows and Heifers. Also one Reg. 3-yr. old Percheron stud colt, or will trade for Reg. Holstein cows. Arthur N. Birkholz, New Buffalo, Mich.

Something Choice Six exceptionally fine Holstein grade heifers by 25 lb. A. R. O. butter bull, out of heavy milking cows. Calves are beauties—¾ white. Splendid size and condition. ROUGEMONT FARMS, Detroit, Michigan.

Dairymen!  
—The Truth

You may be prejudiced against the Jersey because you don't know her. Look her up. She's the Money Cow.

Get This Book—A history of the breed and full of very interesting tests and facts. It proves conclusively that for pure dairy type, economy of production, richness of milk, long life and adaptability to feeds and climates—all these combined—she stands way above them all. This book "About Jersey Cattle" is free. Get your copy now. You'll find it mighty good reading.

The American Jersey Cattle Club  
346 West 23rd Street, New York City

Little Farmstead Jersey Cattle. Bull calves from R. of M. Cows, also heifer calves and several bred heifers for sale. Colon C. Little, Coopersville, Mich.

Grade Jersey Herd For Sale  
FORTY COWS

The result of twenty years careful breeding and selection, are now offered for sale. Individual milk records have always been kept and are open for inspection. If interested write for particulars and if possible visit and examine the herd and their record. Delivery will be made at any time desired during the spring or early summer. A few registered Jerseys also for sale. Address Geo. A. True, Armada, Mich.

THE WILDWOOD Jersey Herd. Registered Jersey Cattle of Quality. Forty head. Tuberculin tested. Majesty's Wonder 90717 heads the herd. His daughters are producing from 400 to 500 lbs. butter in one year as two year old heifers, and are bred to Majesty's Oxford Fox 13424 a class Grandson of Oxford Majesty which combines type and production. Alvin Balden, Canas, Mich.

MAPLE Lane R. of M. Jersey Herd. Tuberculin tested by the U. S. Government. For sale bulls, cows, bull calves and heifer calves. The lowest record of any mature cow of this strain is 533 lbs. of 8½ butter. IRVIN FOX, Allegan, Michigan.

Jersey Bulls for Sale from high-producing dams, with testing Assoc. records, also on semi-official test. C. B. Wehner, R. 6, Allegan, Mich.

Hillside Farm Jerseys A 10 mos. old, solid color bull now offered for sale. Dam is a R. of M. cow with record of 546 lbs. of butter as a 3 yr. old. He is a fine individual. Price right. C. & O. Deake, Ypsilanti, Mich.

23 Registered Tuberculin tested Jersey Cows for sale. Also, young females HERMAN HARMS, Reese, Michigan.

Hope Farm Jerseys. FOR SALE—3-yearling bulls, 2 bull calves. Geo. C. BORCK, Grand Haven, Mich.

## FOR SALE JERSEY BULL CALF

dropped Dec. 1st 1915. Solid color golden fawn. Fine individual, grand dams of both sire and dam are R. M. cows. Will sell cheap.

NEWMAN'S STOCK FARM, Marlette, Mich., R. 1.

## BIDWELL SHORTHORNS

For "Beef and Milk" Registered bulls, Scotch-topped roans, reds and whites for sale. Farm at N.Y.C. Depot; also D. T. & L. R'y. Address G. R. Schroder Mgr. BIDWELL STOCK FARM Box B, Tecumseh, Mich.

Albion Stamp 352670

## Shorthorn Cattle of both Sex for Sale

W. W. KNAPP, Howell, Michigan.

Auction Sale Mar. 1st, 1916. 25 head shorthorns, 7 males, at "Locust" on D. U. R. between Almont & Imley City. WARNER BROS., Almont, Mich.

Two Shorthorn Bulls old enough for service. Golden Wyandotte Cockerels, Collie puppies S. G. BELCHER, R. No. 5, Hudson, Michigan.

DAIRY Bred Shorthorns of best Bates strains. No more females for sale at any price. J. B. Hummel, Mason, Michigan.

FOR SALE—12 Reg. Short Horn Bulls by Maxwalton F. Monarch 2nd, a son of Avondale, from 5 to 9 mos. old John Schmidt, Reed City, R. No. 5, Michigan

Shorthorn Cattle. Five cows, Ten heifers, Five bull calves; also herd bull for sale. Write. Wm. J. Bell, Rose City, Mich.

Shorthorn Cows and Bulls for Sale R. R. Station, Elsie. H. B. PETERS, Carland, Mich.

Polled Durhams for Sale, 8 young cows and heifers bred, 18 mo. to 5 years. Prices right. Write for them. L. C. KELLY, Plymouth, Michigan

Red Polled Bulls Some choice ones for sale. JOHN G. DUDLEY, R. No. 1, Brown City, Mich.

2 Loads feeders and two load yearling steers. Also 2 can show you any number 1, 2 and 3 years old from 600 to 1200 lbs. Isaac Shanstun, Fairfield, Iowa. R-3

## HOGS.

Royalton Bred Berkshires—Fine October pigs both Emperor, registered with papers at fair prices. Write to D. F. Valentine, Supt., Temperance, Michigan.

Berkshires of best breeding of various ages, either special reduced price. Write your wants quick. Mitchell's Lakeside Farms, R. 2, Bloomington, Mich.

BERKSHIRES, Bred gilts and sows due to farrow in April and May. Priced to move quick as crowded for room. Chase's Stock Farm, Marlette, Michigan R. 1.

TAKEN FROM LIFE  
Raise Chester White Hogs  
Like This  
(CALLED BY SOME O. I. C.'S)  
Write for my plan  
"How to Make Money from Hogs"

I have started thousands of breeders on the road to success. I have a very large and fine herd. Every one an early developer, ready for market at six months old. I want to place one hog in each community to advertise my herd.

C. S. BENJAMIN R. No. 10, Portland, Michigan

## SWIGARTDALE FARM

## BREEDERS OF

## HOLSTEINS AND BERKSHIRES

Stock for sale at all times. Berkshires of unsurpassed quality and breeding, at reasonable prices. A choice bull calf, nicely marked, five months old, sire's dam with record of over 27 pounds. Dam of calf a grand daughter of Hengerveld De Kol. Price \$50.00.

Swigartdale Farm, Petersburg, Mich.

Berkshires I have one nice fall Gilt to go at once not bred, and 2 sows bred to farrow in April and May. A. A. PATTILO, Deckerville, Mich.

Berkshire Hogs Sows bred to farrow in April. Best of breeding. Maple Place Farms C. S. BARTLETT, Proprietor. Pontiac, Michigan

Berkshires. Of various ages, either sex, open or bred, prolific strains, Registered, at moderate price. Elmhurst Stock Farm, Almont, Michigan.

Berkshires Excellent boars ready for service. Satisfaction Guaranteed. W. H. EVERY, Manchester, Mich.

Chester Whites Bred sows and Fall pigs for sale also 9 months Holstein Bull. F. W. Alexander, Vassar, Michigan.

Capitol Herd D. J. Swine. Young sows bred, young boars, pigs both sex. Express prepaid J. H. BANGHART, Lansing, Mich.

Chester Whites: Long type prolific kind. Orders booked for spring pigs. Write your wants. Meadow View Stock Farm, R. 5, Holland, Mich.

DUROC JERSEYS. We still have for sale six choice young boars and fourteen choice young sows due to farrow last of April and early May, bred to Michigan Masterpiece, No. 52835; Orion Chief Perfection No. 68945 and Jennings' Pilot Wonder, No. 73373. Prices very reasonable. Send for copy of pedigree. THE JENNING'S FARMS, R. F. D. 1, Bailey, Mich.

DUROC JERSEY BOARS a choice lot of spring boars. Fall pigs, pairs and trios not akin. W. C. TAYLOR, Milan, Michigan.

Duroc Jerseys—Fall and spring pigs either sex, from choice strains. S. C. STAHLMAN, CHERRY LAWN FARM, Shepherd, Michigan.

J. W. KEENEY, Erie, Mich. Gilts for April Farrow. D. M. & T. Local from Monroe or Toledo, Keeney Stop.

DUROC JERSEY tried sows and spring gilts bred to E. D.'s. Defender Col. No. 72975. Inspection invite E. D. Heydenberk, Wayland, Mich.

DUROC JERSEYS, a few bred gilts for May farrow, fall boars, ready for service, also open gilts. Registered Holstein bull calf from high testing cows and even-ly marked. F. J. DRODT, Route 1, Monroe, Mich.

Duroc Jerseys for sale—a few choice fall pigs of either sex. Fancy Buff Rock cockerels. JOHN MCNICOLL, Station A, Route 4, Bay City, Mich.

Duroc Jersey—Sept. pigs either sex & Holstein bull calves & 2 Registered Holstein cows. E. H. MORRIS, MONROE, MICH.

DUROC JERSEYS Boars and sows all sold. Some good fall pigs either sex for sale. Wm. W. Kennedy, R. 3, Grass Lake, Mich.

DUROC JERSEYS—A few bred gilts for sale. Carey U. Edmonds, Hastings, Michigan.

Heavy Boned Durocs—A fine bunch of Bred sows and fall pigs for sale. M. A. BRAY, OKEMOS, (Ingham Co.) Mich.

Duroc Jerseys Six June Gilts bred for June farrow. Price \$25.00. Weight 160 lbs. to 180 lbs. H. G. Keesler, R. No. 5, Cassopolis, Michigan.

Registered O. I. C. Swine  
Stock For Sale—All Ages  
Correspondence Solicited, Visitors Always Welcome

Brightside Farm  
Grand Lodge, Mich.

O. I. C. BRED GILTS, Also young boars shipped C. O. D. J. CARL JEWETT, Mason, Mich.

O. I. C. SPRING BOARS of good type and Red Polled bull calves. John Berner and Son, Grand Lodge, Mich.

O. I. C. choice serviceable boars; bred gilts for April and May farrow; Fall pigs not akin. Write for prices and photo. A. V. Hatt, Grass Lake, Mich.

O. I. C.'s. All sold except one July boar and a few Oct. pigs. C. J. THOMPSON, Rockford, Michigan.

Way Brothers Stock Farm. The home of the big bone O. I. C. Hogs. Stock for sale. Registered free. J. R. Way, Three Rivers, Mich.

O. I. C. Boars for service. Gilts bred for May and June farrow. I prepay express. G. P. ANDREWS, Dansville, Mich.

O. I. C. Sows and Gilts for Spring farrow all sold. H. W. MANN, Dansville, Michigan.

BIG TYPE O. I. C.'s and Chester Whites. Special prices on all boars and fall pigs either sex. These are sired by Abo 2nd, this boar sired our unbeaten breeders young herd at every state fair we showed this year, other sires are Wonder Boy, White Hall and Allen. This boar was junior champion at Wis. State Fair last year. Now Mr. Buyer our pigs are all sired from champions, our price is no higher than other breeders and the Express Co. charges just the same for a poor pig as it does for a good one. Get our catalog and see where the good ones are. We are looking for Spring pigs sired by Schoolmaster, the highest priced boar of the breed and five times G. Champion. We Reg. Free and ship C. O. D. Rolling View Stock Farms, Cass City, Mich.

Registered O. I. C.'s. Attractive prices on fall pigs and last spring gilts. All from large litters. Elmer E. Smith, Redford, Mich.

O. I. C. Choice gilts bred for April and May farrow. Also last fall pigs of excellent quality. A. J. BARKER, Belmont, Michigan, R. R. No. 1.

Breeders' Directory—Continued on page 479.



## Veterinary.

CONDUCTED BY W. C. FAIR, V. S.

**Horse Slavers when Bit is in Mouth.**—I have a horse that slavers some when eating grain and always does it when bit is in mouth. What is the best feed for a brood mare? I am feeding my cows ground oats and for roughage cornstalks, oat straw and clover hay. Would wheat straw, barley straw or hay be a better feed. I am also feeding a calf one pint of meal made by mixing equal parts of calf meal, corn meal and oats together three times a day in skim-milk. Is this enough? B. H., Millington, Mich. Have the grinder teeth floated and change the bit. Some grain, well cured fodder and a few roots is good food for brood mares. Continue feeding your cows as you are doing, providing they are thriving, if not change their feed. You are feeding your calf all right.

**Injured Ankle.**—We have a young mare that slipped and fell last fall, injuring fetlock joint, and our local Vet. tells me that she is incurable. Fetlock joint seems to be weak. H. A. T., Coopersville, Mich.—If rest and good care, at the same time with the assistance of your Vet., fails to help your mare I would consider her incurable. However, she might be useful for breeding purposes.

**Muscular Weakness.**—Have a three-year-old colt that is unable to raise foot high off ground, but no matter how much you twist and press shoulder, it produces no pain. G. W. B., Butterfield, Mich.—Feed your colt on oats, wheat bran and mixed hay. Give him walking exercise every day. Rubbing the shoulder muscles with alcohol twice a day will do some good.

**Sprained Fetlock.**—Last September my five-year-old mare stepped on a cobblestone and sprained hind fetlock, and the joint has been weak ever since. Would a light blister help her? B. T., Coopersville, Mich.—Apply one part powdered cantharides and four parts lard twice a month, or you can safely use the blister you mention in your letter.

**Cow Does not Come in Heat.**—Have a cow that came fresh last fall and has not been in heat since. J. L., Grand Rapids, Mich.—Your cow will doubtless come in heat soon as warm weather sets in, if you give her 1 dr. of ground nux vomica, 2 drs. of ground capsicum and 2 drs. of ginger at a dose in feed two or three times a day.

**Tonic for Horses and Cattle.**—Will you please prescribe an inexpensive tonic for horses and cattle? A. W. R., Plymouth, O.—Mix together equal parts of bicarbonate soda, sulphate of soda, ground ginger, ground fenugreek, ground gentian, powdered charcoal; give a tablespoonful or two at a dose two or three times a day.

**Bunch in Udder.**—Goitre.—I have a two-year-old heifer with a hard bunch the size of a hen egg in udder which I would like to have reduced. I also have a Collie pup six months old with a growth in neck similar to goitre in people. R. S., Lupton, Mich.—Apply one part iodine and nine parts fresh lard to bunch twice a week and you may apply the same ointment to enlarged glands in pup's neck and it will reduce them.

**Inflammation of Bowels.**—Abscess in Ear.—Last year I lost some of my lambs when a few days old, with what seemed to me to be cramps. The lambs would hold to one side and at intervals draw legs up and seemed in great pain and a cold slime would form around their mouth, when they finally died. I applied hot applications and gave them red pepper in milk, but a majority of them died. What can I do if I have any similar cases? I also have two foxhounds that are troubled with abscesses in the ear. J. B., Temple, Mich.—Doubtless your lambs chill soon after birth and die the result of inflammation of bowels or congestion of bowels. Good care is all that is required to save them; besides the ewe's udder should be washed and thoroughly cleaned before she lams. Cautiously apply peroxide of hydrogen to dog's ear, 15 minutes later dust in some boric acid.

**Anemia.**—I have a heifer calf six months old that is not doing well and her horns and teeth are loose. A. M. N., Muskegon, Mich.—Increase her grain ration and give 20 grs. of ground nux vomica, 60 grs. of ground gentian and 60 grs. of powdered cinchona at a dose three times a day.

**Warts in Ear.**—My six-year-old mare has a few small white warts inside of left ear which have been there since she was a young colt. J. T., Moline, Mich.—Apply one part salicylic acid and two parts vaseline to warts twice a week.



For Stock and Poultry  
**Dr. LeGear's Remedies**  
One for every curable ailment

21 different Remedies; each Dr. LeGear's own prescription, from 23 years' experience as an expert Veterinarian. Ask your dealer.

50c stock book free by Dr. LeGear. 116 pages, 65 pictures; on ailments, treatment and care of stock and poultry. Write for it.

**Cure cuts**  
this convenient way

Thousands of barb wire cuts, harness sores and other wounds on stock are healed annually by

**Dr. LeGear's Antiseptic Healing Powder**

A powerful healing antiseptic in a sifter top can; most easily applied remedy known. Just dust the wound with enough powder to cover it—forms an antiseptic coating that soothes, heals, and protects the wound from insects and infection. In use twenty years. You'll be enthusiastic when you try it. Very inexpensive. Get a trial can now—you're always needing such a remedy. Ask your dealer.

**Free Trial can!**

If your dealer cannot supply you with Dr. LeGear's Antiseptic Healing Powder, tell us his name and we'll send you, free, a liberal trial can. Write for it now.

Dr. L. D. LeGear Medicine Co., 712 Howard St., St. Louis, Mo.

## Howell Consignment Sale Co.

Sixth Annual Sale of

**100 Registered Holstein Friesians 100**

**AT HOWELL, LIVINGSTON COUNTY, MICHIGAN, ON APRIL 26, 1916**  
IN OUR BIG SALE PAVILION

This will be a choice lot of cattle representing the best lines of breeding. Our herd sires are strongly bred in the 30-lb. class, most of them are from dams, and sire's dams averaging over 30 lbs. Our stock is mostly from, or bred to such sires as these. They are mostly young, many A. R. O. cows and heifers. Only two or three bulls will be offered. A fine heifer calf from King Segis Champion Model the 40-lb. bull will be sold in this sale, space will not permit to tell of the good things, come and see. Thanking our many customers for their liberal patronage we wish to welcome you back on above date with many new ones.

Catalogs April 10th

Col. Perry and Mack, Auctioneers.

MARK B. CURDY, Secretary.

## Auction Sale

The Farm has been sold and I will close out Live Stock and Farm Implements to the highest bidder on

**The Singer Farm**

One Mile West of Wyandotte on the Townline Road, Sale to Start at 9:30 A. M.

**Wednesday, April 5th, 1916**  
Lunch at Noon

**Eleven Horses**—One bay Clydesdale stallion, No. 14501 (9265) pure bred and reg.; one roan Belgian stallion, No. 6579 (pure bred and reg.); one brown standard bred and reg. trotting stallion colt, four draft brood mares, some in foal, weighing from 1400 lbs. to 1800 lbs., one pure bred and registered; one trotting mare, in foal, with record of 2:23 1/4, standard and registered; one Clydesdale filly, pure bred and registered; two weanling colts.

**Nine Head of Cattle**—One Holstein Friesian bull, 2 years old, pure bred and registered; six milkers, some graded Holsteins; two yearling heifers; two brood sows, six young pigs and farm implements.

William W. Singer, Proprietor  
John J. Kreger, Auctioneer

## FOR SALE

22 head of high grade Holstein heifers two years old. All bred to registered Holstein bull, and about half of them will freshen in 60 days. They are all from good milking strain that will test up good. Fourteen hundred dollars buys them all if taken at once.

WM. H. SAXON, R. F. D. 8, Mt. Pleasant, Mich.

### HORSES



**DUNHAM'S**  
Percherons

For Fifty Years The Best

Send for fine Photographic Catalogue.

**Dunhams,**

Wayne, Dupage County, Illinois

**Registered Percherons**

2 rising two year old Percheron Stallions weight 1550 and 1600 lbs. Priced to sell. Inspection invited.

L. C. HUNT, Eaton Rapids, Michigan.

Percherons, Holsteins, Angus, Shropshires, Durocs  
DORR D. BUELL, Elmira, Michigan.

## Valuable Percheron Stallions & Mares

Must be Sold to Close Estate

**A. A. Palmer, Estate,**

R. R. Orleans, Mich P. O. Belding, Mich.

## 20 Head of Percheron 20

Stallions and Mares

of high quality. Royally bred, some of them by the Great \$40,000 Champion Carnot (66,666). All recorded in P. S. A. Studbook. If you are in need of a good Stallion or mare, come and see us. We can suit you in both quality and price.

H. A. ROHNS & SONS, R. D. No. 4, Napoleon, Ohio.

**For Sale** One registered Percheron stallion three yr. old, dark brown; also One of two registered Percheron mares. Wm. Graham, R. 1, Ada, Mich.

**FOR SALE**—Registered Percheron Stallion Mare and Fillies at reasonable prices. Inspection invited. F. L. KING & SON, Charlotte, Mich.

**For Sale:** Registered Percheron Stud colt folded in June 1915. E. J. Aldrich, Tekonsha, Mich., R. No. 1, Bell Phone.

**FOR SALE.** A Choice Bred Black Percheron Stallion coming three years old. Weight 1800 lbs. Reg. in American Percheron Registry. Bell Phone. D. H. McKinney, Albion, Mich. R. 4

**For Sale:** Two Registered Percheron Stallions coming three and six, black and grey. Will sell for 1/2 their value if sold soon. T. H. Love, R. 3, Howell, Mich.

## LOESER BROS.

We have 100 head of Belgian and Percheron Stallions and mares. Imported and home bred. We have sold pure bred horses in Michigan for the last 25 years, and have the right kind, and at the right price. We can supply any number of work horses, both geldings and mares. Get in touch with us.

**LIGONIER, INDIANA.**

**JACKS AND MULES**

Raise mules and get rich. 200 head fine large jacks, jennys and mules, 14 to 17 hands high. Large registered jacks and draft stallions cheap now. Will trade for sheep, cattle or horses. Write for prices today. Stock guaranteed. Address KREKLER'S JACK FARM West Elkton, Ohio



### HOGS

## AUCTION SALE

APRIL 5, 1916

40 Berkshires, open and bred Gilts and Sows that will farrow in April and May. Will meet morning trains.

**Chase's Stock Farm, R 1, Marlette, Mich.**

**O. I. C's** 20 bred sows for sale. 8 last April gilts averaged 270 lbs. Jan. 10, 1916. They are a very growthy lot. Have some May gilts and last fall yearlings, also a few service boars and plenty of last fall pigs. Otto B. Schulze, Nashville, Mich.

**O. I. C. September pigs,** both sex. Bred E. B. MILETT, Fowlerville, Michigan.

**O. I. C. SWINE** I am offering strictly O. I. C. type bred to farrow the forepart of May—also fall pigs price right. Stock registered in purchaser's name free of charge. A. J. Gordon, R. 2, Dorr, Mich.

**O. I. C. Choice Boars** ready for service. I pay express and register fees. JULIAN P. CLAXTON, R. 8, Flint, Mich.

**O. I. C's. FALL PIGS, EITHER SEX.** Satisfaction Guaranteed. A. R. GRAHAM, Flint, Michigan.

**O. I. C.** Pigs. January Gilts, \$8.00. Also S. C. White Leghorn Eggs, \$5.00 per 100. \$1.25 per 15 post paid. Bruce W. Brown, Mayville, Mich.

**O. I. C. SWINE,** Oct. boars and gilts. 3 Registered Holstein Bulls sired by 21 lb. bull. Gloverleaf Stock Farm, Monroe, Mich. No. 1.

## Boars at Half Price

We still have a few big boned, big type Poland China boars ready for service, weighing up to 250 lbs. not fat at \$20 & \$25 each. Registered in buyer's name. Also registered black Percheron Stallion 2 years old \$250.00. J. C. BUTLER, Portland, Mich., Bell Phone.

## POLAND CHINAS

From our thousand pound Grand Champion Boar and Big Stretchy Sows. Also booking orders now for spring pigs.

**Hillcrest Farm, Kalamazoo, Mich.**

**Big Type Poland China** Pairs and trio not akin out of large litters. G. W. HOLTON, Route 11, Kalamazoo, Michigan.

**POLAND CHINAS** of the big type, bred for April and May farrow. A. A. WOOD & SON, Saline, Michigan.

**Large Strain P. C.** a few choice boars of spring and early summer farrow. A choice lot of spring Gilts bred for spring farrow sired by Big Defender the boar that every body goes wild over. H. O. SWARTZ, Schoolcraft, Michigan.

**Large Type P. C.** Gilts and sows. Bred for Mar. and April farrow. Sired by Big Defender, Big Knox Jr. and Giant Defender. Bred to Big Knox Jr. Smooth Wonder 3 and Big Jumbo, four greatest boars in state. Come or write. W. E. Livingston, Parma, Mich.

**For Sale Poland Chinas** either sex, all ages. Something good at a low price. P. D. Long, R. F. D. No. 8, Grand Rapids, Mich.

**Heavy Boned** Poland Chinas. Fall and Summer Pigs. Sows Bred. Eggs from big Barred Rocks \$1.00 for 15. ROBERT NEVE, Pierson, Michigan.

**BIG TYPE POLAND CHINAS**—bred sows and gilts all sold. Have several good spring boars and fall pigs. Both sex. Call or write W. BREWBAKER & SONS, Elsie, Michigan

**REGISTERED** Poland China Spring Boars and Sows at \$15 each. Making this special price to make room for others. A. G. Meade, Stanton, Mich., Colby's Ranch.

**Large** Type P. C. Sows & Gilts all sold. Have 3 extra good spring boars. Sired by Big Defender. W. J. HAGELSHAW, Augusta, Michigan.

**Large Yorkshires** August September pigs. 2 spring boars. Prices reasonable. W. C. COOK, Route No. 1, ADA, MICHIGAN.

## Yorkshires Gilts

For March & April farrowing For Sale. Waterman & Waterman. Ann Arbor, Mich.

**Large Yorkshire** Swine all ages. Red Poll Bulls ready to use \$75 each. E. S. CARR, HOMER, MICHIGAN.

**GROWTHY THE DISEASE PROLIFIC "MULEFOOT" RESIST- PROFITABLE HOG ING**

WE ARE NOW BOOKING ORDERS FOR SPRING PIGS

**THE CAHILL FARMS**

KALAMAZOO - - - MICHIGAN

**Hampshire Swine.** the great pasture hog. My herd contains the blood of some of the greatest champions of the breed. Headed by a son of the Great "Look Out." Bred sows and boars all sold. Booking orders for spring pigs. Can supply pairs and trios, not akin. Geo. E. Starr, Grass Lake, Mich.

**Hampshire Hogs**—Nothing for sale but Apr. Boars. Taking orders for spring pigs. Write your wants. John W. Snyder, St. Johns, R. No. 4, Mich.

**Hampshire Swine.** Pigs of both sex. Bred Sows Service boars. Write for prices. Price to sell. FLOYD MYERS, R. No. 9, Decatur, Ind.

### SHEEP.

## Kope Kon Farms

SHROPSHIRE and DUROCS. KINDERHOOK, MICH

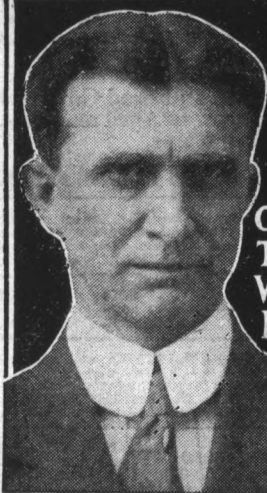
**Oxford Down Sheep.** no stock for sale at present. M. F. GANSLEY, Lennon, Michigan.

**WOOL-MUTTON SHROPSHIRE EWES** Bred to high class imported ram. Special prices now to close out. Also M. B. Turkeys Maplewood Stock Farm, Allegan, Mich.

**CULL BEANS FOR FEED.** Write if you can use a car or less. YOUNG-RANDOLPH SEED CO. Owosso, Mich.

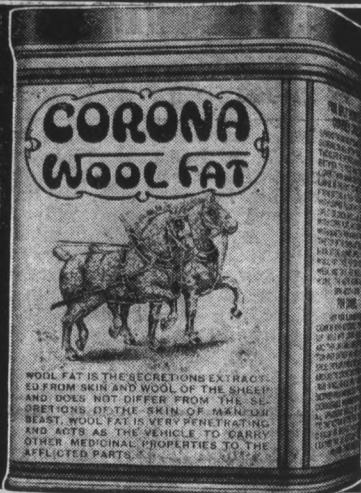
When Writing to Advertisers Please Mention The Michigan Farmer.





C.G. Phillips  
The  
Wool Fat  
Man

# Try CORONA WOOL FAT 20 Days FREE



I want every Farmer and Stockman to try **Corona Wool Fat** 20 Days at my Risk. I don't ask you to send me a cent of money in advance. Just fill out the coupon below and mail to me today. I'll send you the big can of Corona Wool Fat by Parcels Post—Prepaid.

C. G. PHILLIPS, Mgr.



If you own a horse or a cow mail me the coupon below, or even a post card with your name and address, and I will send you a big can of **Corona Wool Fat** on 20 days' trial, with full directions how to use it. I want you to try it for 20 days after you get it. Then if satisfied with results send me 50c. If not satisfied or if it does not do what I claim, you don't have to pay me one penny for it.

## It Heals and Cures

Hard and Contracted Feet, Split Hoofs, Corns, Scratches, Grease Heel, Thrush, Quarter Crack, Barb Wire Cuts, Sore Teats of Cows, Ulcers, Old Sores, etc. You will be surprised at the results.

## Corona Wool Fat

—the Wonderful Healing Compound—is unlike anything you ever tried or used. Don't confuse it with salves or ointments containing grease and blister compounds. It is the only remedy that will penetrate a horse's hoof which is 60% to 70% water. Grease and water don't mix—that is why **Corona Wool Fat** succeeds where all others fail. It is not a grease, but the fatty secretions extracted from the skin and wool of the sheep. It is readily

absorbed, penetrates to the inflamed inner tissues, **heals and cures**, does not burn or blister, leaves no scars, causes no pain, and will never get rancid or decompose.

**Used by 1,000,000 Satisfied Stockmen, Farmers and Horse Owners**

It heals without leaving a scar and will grow an entirely new hoof. Morris & Co., the great Chicago packers write: "We have been using **Corona Wool Fat** on our heavy draft horses working on city pavements for four years. We are highly pleased with its results and would not be without it."

### Send No Money—Just the Coupon Today

I take all the risk. If you have not tried **Corona Wool Fat** before, I will furnish you with a big can to try on any case you have. If it does what I claim you would not hesitate to pay me a five dollar bill for it. If it does not, it won't cost you one cent. I leave it all to you. Send coupon today and I'll send the trial can of **Corona Wool Fat** by return mail—postpaid—as offered.

C. G. PHILLIPS, Mgr.

**THE CORONA MFG. CO.**

48 Corona Block

KENTON, OHIO

Heals Quarter Crack



Before and After Using

### Read the Proof

Corona Mfg. Co., Kenton, Ohio. Gentlemen—I received the can of Corona Wool Fat and tried it on a Barb Wire Cut. Your Corona Wool Fat is the right thing for wire cuts, and every Stock Man should have a big box of it on hand at all times. Yours truly, W. S. Dennis, Robinson, Kan.

Corona Mfg. Co., Kenton, Ohio. Dear Sirs—I have tested Corona Wool Fat thoroughly and find it to be all and even more than you claim for it. It is the best thing I have ever tried. Yours truly, Warren, E. Stover, R. F. D. No. 2 Spring Mills, Pa.



Cures Scratches



Heals Wire Cuts Without Leaving a Scar



Cures Galled and Sore Shoulder



Cures Collar Boils



Corona Cures Sore Teats of Cows



Before and After—Case of Grease Heel

**20 Days Free Trial Coupon**  
Gentlemen—Please send me the trial can of your Corona Wool Fat. It is understood that I am to use this for 20 days in accordance with directions, and if I am satisfied with the results I will send you 50 cents to pay for it. If it does not do as you claim I will owe you nothing.

Name.....  
Address.....  
County.....  
State.....  
Name of Person for which you intend to use CORONA.....