

MICHIGAN FARMER

AND LIVE STOCK PUBLISHED WEEKLY.

JOURNAL ESTABLISHED 1843.

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

VOL. CXLV. No. 9
Whole Number 3877

DETROIT, MICH., SATURDAY, FEBRUARY 26, 1916

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

Tile Drainage In the Saginaw Valley

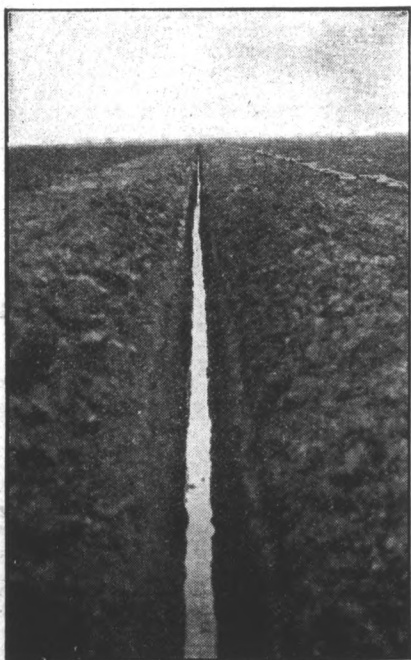
By EARL P. ROBINSON

County Farm Agent, Saginaw County

IN the development of a farm from the raw, wild state to the improved condition, improvements usually come about in this order: erection of house and barn, clearing of land, building of fences, erection of other farm buildings, such as silo, chicken house, hog house, granary, tool house and finally the replacing of the original house and barn with new structures equipped with all the modern conveniences. So far as the farms of the Saginaw Valley are concerned, the task is not completed at this point. Few, if any, farms in this territory are prepared for the most profitable production until they are tile drained. In fact, so important is this matter that in the case of the more fertile soils of this area after the erection of a house and barn, the most important improvement is tile drainage.

The Relative Importance of Tile Drainage.

It has been proven by the experience of successful farmers that the fertility of a farm can be maintained without stock. Furthermore the raising of crops on productive soils and disposing of them at the present prices is fully as profitable as selling these crops through the medium of live stock. It therefore follows that the logical order of improvement on farms having soils of this character is tile drainage immediately after the erection of necessary buildings and the clearing of the land. Heavy, wet soils will be greatly injured by tramping of stock. Furthermore the purchase of stock will require capital that should be invested in tile. Therefore fences are not necessary at this stage in the process of development, and the money required for the same can be put into soil improvement. The soil is the foundation of agriculture; the buildings, fences, live stock, etc., are superstructure, or accessories. Until the foundation is secure the wise farmer



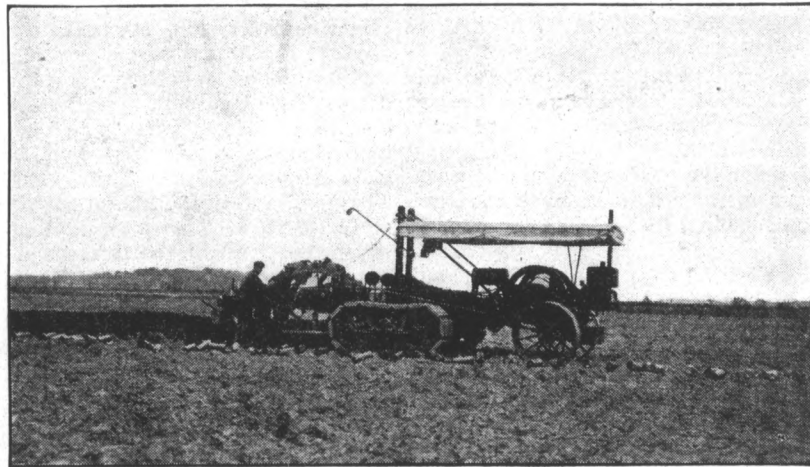
A Splendid Grade was Obtained by Careful Hand-work as Shown Above.

will not put more money than is actually necessary into other improvements.

The Cost and Returns.

Money spent in tile drainage is money well invested. The average cost of tile draining an acre of land in North-eastern Michigan is about \$15. Interest on this sum at six per cent is 90 cents. The maintenance of drains properly constructed will not amount

themselves. The seasons of 1913 and 1914 were both very satisfactory, on the whole, and bumper crops were promised, until along in August there came a couple of extremely heavy rains that destroyed or badly injured thousands of acres of crops on untilled land, while crops on well tilled land were, for the most part, little injured. These two or three heavy rains were all that stood between hundreds of



Modern Tile Ditching Machines do Rapid and Effective Work.

to more than two per cent of the cost, so the total expense will be about \$1.20 per annum. In other words, if an acre of tile drained land can be plowed, fitted, sown to a crop and the crop be harvested as cheaply as an acre of untilled land, then at least \$1.20 worth more of produce must be grown in order to make tile drainage a profitable investment. That it will do this and much more is the opinion of thousands of farmers who have tiled. In fact, I have heard many of the best farmers in Saginaw, Gratiot and Isabella counties state that tile will pay for themselves in the first and second years after being laid. I know from bitter experience in the season of 1914, which was a pretty good year, that the loss of a bean crop on a certain field of my own farm amounted to more than the cost of tiling an area twice that size. I have in mind a farmer who last spring laid nine miles of tile. He was offered \$15 per acre cash rent for 40 acres of this tiled land on which to grow sugar beets. The farmer decided not to accept the offer, and he put in this field and 30 acres in addition to beets himself, because he figured that he could make better money. He has made big money, but the results would have been quite different had this land not been tiled.

Tile Drainage is Insurance.

Tile drainage is more than an investment, it is insurance. Every other investment on the farm increases the risk. If the farmer erects a fine barn he is not safe until he has it covered by insurance. If he invests in blooded stock he must protect his investment; but tile drains are a protection in

The man on the tile-drained farm has a great advantage over the man on the untilled farm in the matter of getting his work done. I find that the farmers in the better drained areas of Saginaw county get to work on the land a week or ten days earlier than those living on the undrained areas.

Then there are fewer days wasted from time to time throughout the season on account of the condition of the soil. When it comes to harvesting in a wet season like the present one, there are fields which cannot be entered with teams and machinery on account of the excessive moisture. The result is that the necessary labor cannot be performed and severe losses occur with crops that might be harvested had there been a good tile system to quickly carry away the surplus water.

Object Lessons Important.

Years ago a good deal of tiling was done in Frankenmuth and Blumfield townships and more recently the farmers have been active in making this improvement in Buena Vista township and the extreme western part of this county. Some other parts of the county needing tile drains fully as much as the areas mentioned have tiled little or none at all. This, like many other things, is largely a matter of example. Somebody must start the ball rolling. When this improvement is introduced on some of the farms, the neighbors are not slow in appreciating the advantages. They will soon notice that their progressive neighbor gets onto his land earlier in the spring, gets along better with his work through the summer, suffers less from floods and secures better crops. I find in this situation a strong argument for farm demonstration. The county agent will have accomplished a good work if he gets drains properly installed on some farm as a demonstration of their

(Continued on page 270).



The First Beet Crop Grown on this 70 Acres After Tiling Brought \$6,250.

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—41 Park Row.
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
E. H. HOUGHTON.....Sec.-Treas.

L. R. WATERBURY.....Associate
BURT WERMUTH.....Editors
FRANK A. WILKEN.....
ALTA LAWSON LITTELL.....

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

TERMS OF SUBSCRIPTION:

One year, 52 issues.....50 cents
Two years, 104 issues.....1.00
Three years, 156 issues.....\$1.25
Five years, 260 issues.....2.00

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 adv't in serial for less than \$1.20 each insertion. No objection able advertisements inserted at any price.

Mem Standard Farm Papers Association and Audit Bureau of Circulation.

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

DETROIT, FEB. 26, 1916

A FEW LEADING ARTICLES OF THE WEEK.

- Tile Drainage in the Saginaw Valley.**—Urging tile as a most profitable investment265
- The Bean Disease Situation.**—As viewed by Michigan's specialist in bean diseases.....267
- Everbearing Strawberries.**—From the standpoint of commercial production271
- Cattle Feeding in Michigan.**—Describing the attitude of a practical feeder276
- The Man, the Cow and the Farm.**—A discussion of the personal equation as related to dairying.....279
- Constructing the Poultry House.**—Essential Factors to be Considered292
- How to Sell the Big Crops.**—Methods employed by co-operative producers' associations295
- Gasoline and Alcohol.**—A discussion of the availability of alcohol as a fuel.....300

ALWAYS SIGN YOUR NAME.

Inquiries are often received from parties who desire information, but who neglect to sign their name to the communication. Such inquiries are not given consideration under our rule. The name of the inquirer will be withheld from publication when this is requested, but it must accompany the inquiry as an evidence of good faith, or same will not be answered through our columns.

THE FARM GARDEN.

Our next issue will contain several special articles relating to the farm garden, which will be of special interest to every reader who would make the farm garden contribute its full share of delicacies to the farm table.

CURRENT COMMENT.

Judging Live Stock at the Fairs. A subscriber asks for the discussion through these columns of whether

it is better to have the judging of live stock at local fairs and in other show rings done by a single judge or by three judges acting together, and why?

By way of opening this discussion let us recount briefly the advantages of having a single judge, as is the almost universal practice in all show rings at the present time. In the first place; the judging of any breed of live stock in the show ring should be done by a judge or by judges who have a thorough knowledge of the desirable points of the breeds which they judge. It is ordinarily quite difficult to get even a single judge who is thoroughly compe-

tent from a technical standpoint to place the awards in accordance with the merits of the respective animals entered in conformation with the scale of points established by the record association of the breed. Too often the officials of local fair associations do not give the matter of selecting judges the attention which it merits.

The very best plan of selecting the judges for this work is through correspondence with the officers of the state breed associations. These officers will gladly suggest the names of men who would make competent judges in the different breed classes who are so located that the cost of securing their services would not be large. When the awards are placed by competent judges the show ring becomes of greater educational value to the patrons of the various breeds who show their animals in same, as well as to that portion of the public which may have sufficient interest in the competitive exhibits to watch the placing of the awards.

The plan above suggested is the one followed in all the larger show rings of the country where the competition is open to the world or to the breeders of several states, except that in this case the national breed associations are asked to suggest names of men who would make good judges in these events. It is the usual custom to ask for the suggestion of several names so that the officers of the fair or other exhibition may have the opportunity of choosing from among those whom it may be easiest to obtain, or who for any reason they may prefer to ask. Where it is attempted to have more than one judge, the problem of securing competent men to place the awards is multiplied. There is also a greater chance of dissatisfaction in the manner in which the awards are placed whenever the judges may not be unanimous in their opinion as to the manner of placing them.

It is unfortunate for them, and for the business in which they are engaged, that most farmers, and particularly those who are developing new farms, are unable to properly finance their business during the process of its development. It becomes necessary for them to choose which one of several needed improvements or investments they will first make. Naturally it is to their advantage to choose the investment which will add to the producing or earning capacity of their business rather than one which satisfies a real need which can, however, be deferred until a later date without hindering the immediate development of their business plant.

The leading article of this issue emphasizes the fundamental fact that the soil is the foundation of agriculture, and that until this foundation is made secure, the wise farmer will not put more money than is actually necessary into other improvements; in other words, when there is an opportunity for choice between investments, one of which will add to the fertility or possible producing power of the soil, that investment should be considered a fundamental or basic one and be given preference over a more superficial need. The article above mentioned emphasizes the fact that in the territory described tile drainage is a basic or fundamental investment which should be made as early as possible in the development of a farm plant.

In another soil fertility article written with a particular view to the needs of the farmers of another section of the state, the writer, also a county agricultural agent, emphasized the paramount importance of adding vegetable matter or humus to the soils of that community. In that case the investment required in the fitting of the land, the sowing of supplementary crops for green manure, and in many cases the application of lime to promote the vigorous growth of soil improving legumes, was pointed out as the most urgent need of the average

farm and the best investment which the farmers of that section could make.

This matter of choosing between needed expenditures for the improvement of the farm plant is a point in farm management which should be given the most careful consideration by every farmer in the state. The fact that the fertility of the farms of most sections of the state has become somewhat depleted rather than improved with the passing years, is proof that this point has not been given the attention which it merits in every case and probably not in a majority of cases. Truly the soil is the basis of successful agriculture, and in conserving and increasing its fertility the home-owning farmer is starting right in the solution of the vexed questions of farm management.

The leading article of this week will not interest every reader of this paper from a technical standpoint, yet we trust that it may at least suggest a careful study of this basic question of farm management, to the end that such steps as are needed to conserve and increase the fertility of the soil on each and every farm may be given proper consideration, and in so far as they require an investment of labor or money that they be given the preference over other and less pressing needs.

In the columns of a recent issue will be found a report of a discussion held at the meeting of a farmers' organization, at which the question of taxation was the subject under consideration. As is the case in most discussions, the speakers aligned themselves on opposing sides in this discussion. One side expressed great displeasure at the increase in taxation and vigorously criticized public officials responsible for such increase. They believed in the liberal support of state institutions as a general proposition, but thought the farmers should not be oppressed thereby. Another faction took another point of view and advanced the proposition that increased taxes were not a calamity, provided the public got value received from the investment, and that the public could choose other officials if not satisfied with present incumbents.

This idea affords a suggestion upon which every taxpayer might act to advantage. Just put in a half-hour studying the tax receipts to determine in what general manner the money contributed was expended. If this is done the average tax-payer will find—doubtless with some surprise—that the larger items are due to the expenditures with which he is most closely acquainted. Generally the school tax will be found to be the largest, and very few thinking men believe that our local schools are either too numerous or too good. The next largest item of cost under normal conditions will be the tax for highway improvement. There is undoubtedly a growing feeling on the part of the farmers of the state that they are getting value received for expenditures of this kind. Under normal conditions the cost of running county and township municipalities will about equal the amount of the state tax, and a little time devoted to ascertaining the cost of various items of township, county and state administration will be time well expended.

It will be easy to begin this investigation with the township by carefully looking over the printed statement of township expenditures which is available to every elector on town meeting day. Later follow the report of the proceedings of the county board of supervisors carefully, and next year when the Legislature is in session, make a study of the appropriations made for various state purposes. In this way every tax-payer will be better informed as to whether he is getting value received for this compulsory expenditure, and such criticisms as are made will be more effective by being given concrete rather than general application. The tendency toward

higher taxation is regrettable, and it is most important that the taxpayers should get value received for their tax money.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—What appears to be the most important event of the past week in the great conflict was the capture by the Russians of Erzerum, a strongly fortified Turkish city located a hundred miles south of the eastern extremity of the Black Sea. The Russian forces are continuing their advantage by conquering smaller places to the right and left of this city and now the port of Trepizond on the Black Sea is threatened by both land forces and the Russian fleet, and also Diarbekr which is far inland and near the Bagdad railway. Should the Russians be favored with victory in the latter instance it will go far toward relieving pressure against English troops surrounded near the lower Tigris river. Allied forces have taken over most of the railroad lines of Greece. Italians and Austrians are close together near Durazzo, Albania, and a battle is impending. There have also been minor engagements along the fronts of Northern Italy. Violent artillery fighting occurred in the Dvinsk district on the Russian front and in Galicia there is greater activity between Russians and Austrians. Germans captured 350 yards more of trenches from the English north of Ypres on the Yser Canal. Frequent artillery duels have occurred at other points on the western front, with nominal results.

The executive authorities of Berlin have decided to limit the sale of butter to a quarter of a pound for each person weekly.

A munition plant at Monckton, N. B., was destroyed by fire last Sunday night.

In order that she may maintain her neutral position, Roumania has offered to sell wheat to all belligerents, upon the condition, however, that none be exported from her territory.

Wheat in Liverpool sold at \$2.11 per bushel last week, which is the highest price since the Franco-Prussian war in 1871. High ocean freight rates which amount to 48 and 50 cents per bushel from America to Liverpool, and 75 cents per bushel to Mediterranean ports are responsible for the wide margin between prices in England and continental Europe, and the United States.

Conditions are apparently improving in Mexico. Although Gen. Villa, the rebel chief, has thus far escaped his pursuers, his forces are so small and poorly equipped that operations by him are not being so seriously considered as a short time ago.

National.

Legal controversy over the ownership of the prize ship Appam at Newport, Va., is now in the hands of the Federal District Court. The development of the proceedings is being watched with great interest, owing to the international questions involved.

Mystery surrounds the illness of 35 persons who were compelled to ask for medical aid after partaking of a church dinner given at Carnegie, Pa.

The defendants in the famous East-land tragedy case were acquitted by the United States court in the recent trial.

The request for a war ship to carry a supply of milk to infants in Germany and Austria has been declined by Secretary of the Navy Daniels.

Relief work around Newellton, Louisiana, where high water has flooded practically all of the low country, must be continued for perhaps a week, as many outlying districts must be reached by steamers. The condition of the marooned refugees is still uncertain.

The census bureau at Washington estimated the population of the United States on January 1 at 102,017,036.

The fifty-sixth annual convention of the National Educational Association is being held in Detroit this week. Fully 5,000 delegates will be in attendance.

An epidemic of distemper among the horses in upper Michigan is seriously hampering lumbering and wood cutting activities.

New York state is seeking to have the treasury department at Washington enforce an order to stop the importation of anthrax into this country from China and South America. The disease is brought in on hides and can be destroyed by proper disinfection.

Fort Wayne at Detroit will not be abandoned as an army post. The increase that is certain to result from the present agitation for a larger standing army will make necessary the use of all army posts now available for the training and housing of the soldiers.

The Bean Disease Situation

Address given by Prof. J. H. Muncie, Specialist in Bean Diseases at M. A. C., before the recent meeting of the Michigan Experiment Association.

MICHIGAN, as every grower well knows, ranks first as a bean growing state. During the past ten years, this state has planted annually an average of about 400,000 acres to this crop alone. The average yield for this period is approximately 4,500,000 bushels of dry edible beans.

As beans came to be grown on a larger scale, the farmers realized more fully, the peculiarities of this crop and its limiting factors.

During the past season, due to adverse weather conditions and diseases, only about 40 per cent of a total crop was harvested in the state. This amounted to approximately 3,800,000 bushels of beans.

The Department of Botany is concerned with one factor in bean production, the control of bean diseases. These diseases are known as the bean anthracnose and bean blight.

Anthracnose.

Bean anthracnose is caused by a very minute parasitic plant, called a fungus. The root-like threads penetrate the seeds and thus the disease organism is carried to the field on the seed beans. The moisture in the soil necessary for the germination of the seed, causes the dormant threads or mycelium to grow. When the diseased seedling pushes its way above ground, the anthracnose is readily seen as reddish brown or black sunken spots on the seed leaves. From the seed leaves it spreads to the stems and leaves. The disease is easily recognized on the leaves by the reddening of the leaf veins. And later it spreads from the leaves to the pods. On the pods the characteristic reddish brown or black sunken spots are formed. After the pods become diseased the fungus pushes its way through this tissue into the seed within. On the seed it produces a reddish brown and black circular spot.

Blight.

The bean blight is caused by a bacterium. It also is carried into the field upon or within the seed. The progress of the blight is very similar to that of the anthracnose. Its first appearance above ground is as amber-colored blotches on the seed leaves. Spreading to the leaves it first produces a water-soaked, area usually on the margin of the leaf. This water-soaked area later dries out, becoming brown and papery. On the pod it produces amber-colored flecks or blotches. The bacteria penetrating the pod produces yellowish blotches on the seed. These yellowish blotches on the seed are commonly mistaken for frost injury.

How these Diseases Spread.

The growth, spread and severity of these diseases depend to a great extent upon weather conditions. Wet weather during the growing season causes an increase in the amount of disease present. Continued dry weather during this season checks these diseases. Moisture is absolutely essential to the growth and spread of both diseases.

Since the spores of the anthracnose organism and the bacteria of the blight organism are present on the dew or moisture on the diseased spots, beans should not be cultivated while the plants are wet. To do so will spread the diseases. It is very frequently the case that beans on heavy undrained land are much worse affected by these diseases than the beans on light or well drained soils. The relatively higher amount of moisture in the heavy or undrained land and consequent greater humidity of atmosphere immediately surrounding the plants are more conducive to the growth of these disease organisms. Bean land must be well drained.

Diseases do not Live Over in Manure.

The question has often been asked as to whether these organisms live over from year to year in the bean trash

or bean manure applied to the soil as a fertilizer. To solve this problem we have carried on some experiments.

Diseased bean fodder was fed to a cow and the dung collected. Sterile soil was fertilized with the dung and the disease-free beans planted in it. No evidence of these diseases was found on the plants. A solution of this dung was also made and sprayed upon disease free plants. In this case, also, no evidence of these diseases appeared. From the results of this experiment we may conclude that the casual organisms of anthracnose and blight do not survive passage through the alimentary tract of cattle and are not transmitted to the soil in the dung.

In a second series of experiments sterile soil was inoculated with diseased bean stems, leaves, pods and dust, from the thresher and left out of doors all winter. Disease-free seeds were planted in the summer in this soil and in uninoculated sterile soil. The anthracnose made its appearance upon the lower leaves of the plants in the inoculated soil while there was no disease found on the plants upon the sterile soil. Later in the season the blight also appeared on the plants on inoculated soil and spread to the plants on sterile soil. The results of this experiment point rather conclusively to the fact that these organisms can live over in the soil on diseased bean trash. Hence, the trash should not be plowed under and beans planted on this soil the following season.

Clean Seed the Only Insurance.

For the past two seasons we have planted bean seeds treated with various chemical solutions, dry heat and hot water. So far these treatments have failed to control the anthracnose and blight. Spraying with bordeaux

free from disease had they not been planted in the same field with our own home-grown seed which produced badly diseased plants.

We have found, from data collected during the past three seasons, that early maturing varieties of beans have a smaller amount of diseased seeds per bushel than those of later maturing varieties.

Because of the early ripening and consequent drying of the pods, the progress of the disease organisms through the pod into the seed is greatly checked. The variety upon which these data were collected is known as the Early Wonder.

A Possible Solution of the Seed Problem.

For the past two seasons we have grown Early Wonder beans in the state of Washington. The seed sent out there in 1914 picked two pounds. Samples of the beans from this seed showed a small percentage of diseased, discolored beans. Samples of the plants from the 1915 crop pulled at random from the field and sent back to us, showed minute blight blotches on the pods and no anthracnose. There was no evidence of either disease on the seed from these pods.

It may be possible to grow Michigan beans under dry weather conditions in western states and bring the seed back for planting.

An anthracnose-resistant red kidney bean has been found in New York, but so far no disease resistant white pea bean has been discovered. However, it is possible that such a resistant white pea bean may be found and it would repay one's efforts to keep on the lookout for disease-resistant bean plants.

We recommend that early maturing varieties of a known high yield and low pick be planted.

Beans for a small seed plot should be selected while in the pods. Select for seed, from the field, the beans in



The Ultimate End of the Old Rail Fence.

mixture has not given satisfactory results.

Much can be done to eliminate these diseases by carefully hand-picking the bean seed, but this does not entirely control them. All clean appearing seeds are not free from these diseases.

It is a good plan to save for seed the beans in pods relatively free from these diseases. The grower can go through his field and pull up the vigorous plants showing little disease on the pods. In this way vigorous seed with little disease can be secured for planting the following season.

This plan has been tried by Mr. A. B. Cook, of Owosso, and is very satisfactory in reducing the amount of disease on the crop.

Some Experimental Knowledge.

Since wet weather is necessary for the development of these diseases, it was thought advisable to try out seed from regions having a dry growing season. White Navy Beans were obtained from Idaho, Arizona, California, and planted in the test plots. The plants from this native western seed were not only badly diseased but failed to mature during our growing season.

It is very possible that these plants would have remained comparatively

the cleanest pods on the most thrifty and productive stalks. Carefully hand-pick the seed thus obtained. While hand-picking does not entirely eliminate these diseases, it decreases the amount of disease put into the field on the spotted soil.

The outlook for next year is encouraging. In spite of the bad season, it seems likely that a grade of beans better than that of previous years will be planted. This is due to the widespread and vigorous attempts which are being made by bean jobbers and farmers to get seed of low pickname from the localities where the weather conditions were not conducive to the spread of the diseases. Such clean seed, if thoroughly repicked to eliminate all stain and spot will constitute as safe seed for next year as can be had.

THE BEAN CROP FOR 1916.

In the bean growing sections the question foremost in the farmer's mind is, "Shall we, after the disastrous season of last year, grow beans, and if we do what about seed?" Weather conditions were primarily responsible for the spread of bean diseases as well as blight in potatoes. The best advice

from the plant pathologists in the employ of the Federal government is that with normal weather during the growing season there would be a normal crop in its freedom from disease, with as good seed as possible for planting. Continued wind and rain last year multiplied many times the spread of the spores, even when apparently good seed was planted.

Hot dry weather will, inversely, destroy many millions of spores, even when not over good seed is planted. When the seed bean germinates the anthrax, or pustule, is bared by the white skin, left behind, to the rays of sunlight.

The Michigan-grown bean seed, with an average percentage of diseased stock, comes back from its sojourn of a year's cycle in the irrigated sections of the west with the white clean pods of the days known in Michigan in past years. Sunshine and weather conditions have been the agents of regeneration. In fact, this is the method of the regeneration of the various grades of garden beans by some of the large seed houses. From these facts one can draw their own conclusions as to a normal season for the crop of 1916.

Another interesting observation was last year, in what is called the sheep feeding district of Shiawassee county, on clover sod covered with sheep manure after the hay crop was removed and the land well prepared, the crop was normal, both in quality and quantity. In the same sections with similar seed on land less well prepared the crop was sub-normal in yield and badly spotted with anthracnose.

One of the interesting contributions to bean growing is by George Ricker, of Huron county, who for several years has grown an early variety of Flint corn put in at the time of planting beans at the rate of 16 quarts of beans to two quarts of corn. Mr. Ricker grew above an average crop of beans in 1914 and 804 baskets of ears of corn. In 1915, 18 bushels of red kidney beans and 60 bushels of corn per acre. A very early type of corn must be used to mature within the period of bean growing.

Beans in Hungary.

Mr. Strauss, of Buda Pesth, Hungary, described bean growing in his home country, at the recent meeting of the bean jobbers and growers in Detroit, mentioning that beans were grown as a border crop along hedges and among the corn, for the reason that the bean thrived best with corn for a shade. The bean in Hungary is not a field crop in the sense used in Michigan, but is grown by old men and women, planted, cultivated and threshed by hand, with an annual export prior to the war of approximately 2,500,000 bushels. And this quantity, gathered in not to exceed five or eight bags from an individual grower, shows the Michigan bean raisers are competing with a grade of labor that makes for low prices.

For the past two years this has not been a factor nor will it be for several years at least after the close of the war, because no beans will be available for export.

Commercially, prospects are exceedingly bright for bean prices of the 1916 crop. There will be none of the 1915 beans on the market and a scarcity will exist before the crop is grown. Europe will need beans for 1916, whether it may be war or peace. One of the largest dealers in beans hazarded the opinion that the basis to the farmer would not be below \$2.50 per bushel. Even with a very large crop.

The dealers say that compensatory prices and price maintenance are all up to the farmer by conservative marketing, and that the bean market this year has been well handled.

The Michigan bean growers will meet at the Agricultural College during the week of the Farmers' Round-up Institute, on Thursday, March 2, Questions of seed diseases and marketing will be embraced in their discussions. Shiawassee Co. JAS. N. McBRIDE.

Get More POTATOES From Every Hill

POTATOES yield better when planted at even, uniform depth. You'll get better potatoes and more of them if you'll plant with a



Giant Potato Planter

Has a new, improved type hopper. No bruising or crushing—no choking or skipping possible. Feed is under perfect regulation and is visible.



THE OHIO RAKE CO.
Makers of Full Line of Potato Machinery
1500 Albany Street
Dayton, Ohio

Ask for free circular of O. R. C. Line

The Lankford HUMANE HORSE COLLAR

cures your horse while he works

Galls and sore shoulders reduce the efficiency of your horse—sap his strength—down his spirit. Cure him without the use of medicine—while he does his heaviest work, with the Lankford Collar.

We guarantee a cure when properly fitted. Be careful and get the genuine Lankford Collar—made of best white sail duck, trimmed in extra heavy leather and stuffed with clean and downy curled cotton, medicated, which will not pack or harden. Imitations are filled with unsanitary straw, and are dangerous to use. The Lankford fits any shape neck—easily put on or removed—always soft and pliable. Will not sweat. Hame straps attached. Prices \$1.25 and up. See your dealer.



Over 12,000,000 sold Lankford Collars prevent galls and sore shoulders, as well as cure them. Get one today—one for each horse, but be sure it's a Lankford. Buy a Lankford. Send postal for copy and of our literature on Lankford Horse Collars.

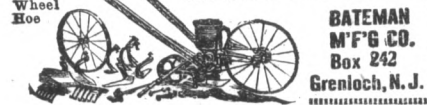
Powers Mfg. Co.
Dept. 27, Waterloo, Iowa

A FARMER'S GARDEN

Helps his wife to plan her table in busy times. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost impossible in your busy life without proper tools. They cost little and save much hard work.

IRON AGE WHEEL HOES AND DRILLS

will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant closer and work these hand tools while the horses rest. 38 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools" Free.



BATEMAN MFG CO.
Box 242
Greene, N. J.

PRICES SLASHED!

My new, 1916 low prices and selling plans, cash or time, are fully described in my new 250-page book. Do not buy a spreader of any make or kind until you get this book. Ask for my special proposition on spreaders from now until seeding time, which ought to sell 25,000 machines. My new model spreader with all steel beater, all steel V-rake, low down, light draft, double chain drive, cut under front wheels, channel steel frame, trussed like a steel bridge, steel tongue, endless apron and force feed makes a finer and wider spreading machine than ever. Shipped from Waterloo, Kansas City, St. Paul, Council Bluffs and Chicago. All styles and sizes of spreaders and spreader boxes fully described in this big, new book. Ask for it.

WM. GALLOWAY CO.
Box 180 Waterloo, Iowa

Mention Michigan Farmer when writing to advertisers

Solving the Tramp Problem

AN article on the tramp nuisance, contributed to these columns by the writer, some weeks ago, has called forth considerable comment. The subject is not a new one, indeed, it is as old as the race. The professional idler has always been with us. The ideas expressed in the article mentioned, were not new, and probably in some form, have been put in print many times. But like many other ills, the tramp problem becomes more complicated and perplexing as time advances and conditions change. A few words at the opportune time, on a question that is vital to the life of a people, set readers to thinking, even though they may have known and held similar views for years.

In reopening this question, the writer wishes to set forth a few local facts and conditions not available when the first article was written. These facts prove conclusively, the contention that the great majority of our tramps are men who are seeking idleness rather than industry. And when you admit this fact, the whole fabric of support to tramps through hand-outs and other methods, falls to the ground. But to state the facts:

In two villages in the writer's section, a novel experiment has been tried during the last eight or ten weeks. These villages, like many others in Michigan, have been of late literally over-run with tramps. The first cold wave was sure to blow in fifteen or twenty hoboes who applied to the village marshal for a night's lodging and breakfast; and this state of affairs would continue day after day, through most of the colder months. Obviously, the expense was an important item. The two villages under consideration decided to feed no more tramps unless they were willing to give labor in return. The plan was this:

A Town Wood-pile.

A town wood-pile was reared, and when a man applied at the station for a meal or a night's lodging, he was given an axe and a saw, and escorted to the wood-pile. Here he was invited to earn his keep, and the good old adage, "He who will not work can not eat," was enforced. The scheme proved effective beyond all expectations. The number of visiting tramps grew fewer and fewer as the bad news spread throughout hobo land, and at the present writing, tramps in these villages are rare.

In one of the towns, at least, a secondary benefit has come from the experiment. During the late summer and early autumn, the many beautiful shade trees of the village were treated to a much-needed trimming. The limbs thus cut off composed the town wood-pile. As this wood was cut into proper lengths by tramps, it was distributed among the needy families of the village. And let it be said in this connection, that the right kind of charity is a blessing and blesses him who gives as well as him who receives. The needy families of any locality who, through sickness or death or other misfortune, have come to want, are proper channels through which to exercise the charitable spirit. But to feed an army of able-bodied, indolent, shiftless idlers, is not charity—it is a crime. It is a crime against the individual and against society.

The Effective Remedy.

In the facts and conditions existing in these villages, then, we have a remedy for the tramp evil. All that is needed is to give this plan universal application. Let individuals and communities adhere strictly to the rule. Let a pretense at work be ground of refusal of food, for many of these gentlemen of the road are master hands at pretending to work. In any community where a village or community has arranged the matter, let individuals refuse altogether to feed vagrants under any consideration. Send them to the town wood-pile or whatever it

may be, and they can get work. Work or starve. Let this be the motto. This is true kindness both to the tramp and to those deserving of help. Misapplied charity is worse than none at all. Why should any man who is well and strong be led to think he can live on the hard-earned means of his fellows? Devoid of responsibility, careless, shameless, indolent, lacking in the primal principles of manhood and good citizenship—these are the attributes which apply to the professional tramp. In nine cases out of ten, he is a professional bum as well. Cases are all too numerous in which a tramp in a half-drunken condition has asked for a hand-out, and thrown away what was given him, before he was out of the doorway.

In conclusion, let us repeat the sentiment of a former article referred to in the beginning. The farmer has his part to play in solving this question. He, as much as any class, will benefit from the obliteration of the tramp nuisance. Fear, false sentiment, religious superstition, mistaken philanthropy—all must go. Greater security for property, more labor available on the farms—these are some of the direct benefits to the farmer. Lend a hand, and benefit yourselves while you are benefiting the tramps and society.

Hillsdale Co. J. A. KAISER.

CROP AND FERTILIZER QUESTIONS.

Best Field for Sugar Beets.

Will you please advise me which field to put in sugar beets? I have four acres of good soil; had beets on it last summer but the beets drowned out; only got 12 tons. The weeds were well kept down and the land was plowed seven to eight inches deep last fall. Or I have a piece of old sod that was plowed six inches deep last fall.

Sanilac Co. W. E.

As both fields are fall plowed I think you would stand a good chance with a favorable season to get a good crop of beets on either field.

Usually I would not recommend to plant beets after beets, but this field owing to too much rain, did not produce a crop and I should expect a better crop here than on the old sod field. A heavy sod is not recommended for beets, surely not if spring-plowed, but it will do very well when fall plowed.

Sowing Alfalfa in Growing Wheat.

We have a side hill field in wheat which we would like to seed to alfalfa as soon as possible. Now this field always produced fine crops of clover, but washes when a cultivated crop is grown. The field is not steep in any place but the slope 40 rods or more and the natural drainage is perfect. We have nine acres of alfalfa which has been seeded six years. It always was good color and has yielded better every year, being the best this year. Now I am top-dressing this wheat this winter with the manure made from the feeding of this alfalfa once a day to my cows. Would you think I would be successful if I seeded this field to alfalfa, same as one would red clover, in the spring? We inoculated our nine acres six years ago when we seeded it, with sweet clover soil. Would not this manure inoculate this wheat field? I top-dressed a field of wheat last winter and seeded to clover, mixing in a little alfalfa. The growth of clover was very heavy and I did not notice much alfalfa the first cutting. But when the second crop came on there was much alfalfa scattered all through it, and of very good color. This field had never grown alfalfa before.

Macomb Co. D. H.

I have been experimenting with this same object in view for a number of years, and am not ready to make any definite report or give advice as yet. At first I mixed only a little alfalfa seed with the clover. One year quite a bit of the alfalfa grew, but usually only a very little, and very little for a second crop. Last spring I mixed a little clover with the alfalfa, (just the reverse in seed), and seemingly had a fair catch of alfalfa, but there was more clover even then, than alfalfa. This land was covered with stable manure and one and a half tons of good

limestone applied in spring and planted to corn. The corn stubble was disked and sown to wheat. The clover seed was sown last March. I think I have a stand of alfalfa, but can tell better next summer. The wheat had 250 pounds of fertilizer. I would inoculate the alfalfa, it costs but little. Alfalfa doesn't seem to be as vigorous to start as clover.

How to Use Hardwood Ashes.

Am making a fine lot of pure hardwood ashes, (beech and maple). I thought of using them instead of commercial fertilizer in my corn planting, putting a handful in each hill; or had I better mix the ashes with muck, half and half? Please state best disposition to make of them.

Oakland Co. W. L. L.

Unleached hardwood ashes contain five to six per cent of potash and one per cent of phosphoric acid and over 30 per cent of lime. I would advise against putting in hill, as it is liable to injure the germinating power of the seed. Better screen them and apply with fertilizer drill at the rate of 200 to 250 pounds per acre. I think it would be better to mix them after screening with acid phosphate. Mix equal parts and apply 200 to 250 lbs. This will give you a two to three per cent potash mixture, and the phosphorus will be of great benefit.

It is best not to mix too long before sowing. Mix in the morning what you will sow during the day.

Selling Sweet Corn to Canning Factory.

In your paper some time ago you printed an article written by Colon C. Lillie on crops raised for canning factory. He speaks of sweet corn as a profitable crop, but he does not state how it is marketed, whether in the husk or not, or what they pay for it; whether they buy by the hundred pounds or by the bushel. Now if he will be kind enough to tell me just how he markets his sweet corn and how much he gets for it, I shall be very grateful.

Barry Co. C. C.

The sweet corn is picked or snapped from the stalks when in the proper condition for canning, that is, when in best condition for eating green, or when the majority of the ears of the field are in that condition. It is hauled at once to the factory and sold by the ton. Our factory pays \$8.00 per ton for Evergreen, \$9.00 for Country Gentleman and \$17 for Golden Bantam. If one wishes to he can draw the husks and cobs back home for feed.

Speltz vs. Oats.

What time of year is it sown, how many bushels of seed, and what is the yield of speltz per acre on light sandy land? Are there any drawbacks to it?

Muskegon Co. R. J. P.

Speltz (or emmer) usually does better on dry, sandy soils than oats. Many farmers on this kind of soil are now growing it in preference to oats.

It should be sown early in the spring at about the usual time of sowing oats, and about the same quantity per acre. There are no particular drawbacks to growing this crop successfully. As with all crops, the better the land the better the crop. While this crop will do better on dry sandy land than oats, it will do better on rich ground than on poor ground. It will make good use of manure or fertilizer.

Growing Lima Beans.

I am thinking of putting in lima beans. Would you kindly tell me what variety is best, what soil they require, just what time they should be planted and what time they are harvested; also, is there a good market for them, and are they hard to grow and do they require a lot of work?

Macomb Co. SUBSCRIBER.

I know nothing about growing Limas as a market garden crop, but have had experience growing the dwarf Limas for the canning factory. They are not as reliable nor as easily grown as our common beans. They ripen very unevenly, and are seriously affected by cold, bad, wet weather, and are not very hardy. They do best on a sandy loam or warm dry soil. They can be sold green or as ripe beans. I do not know the market price. Factories pay about two and a quarter cents a pound for the green shelled beans.

COLON C. LILLIE.

TRYING TO BEAT NATURE.

The laws of nature were made long before farming became a recognized vocation and the laws were on nature's statute book long before man found that the book existed. In the farming business we are constantly bumping up against the laws of nature and as long as we try to fight those laws our farming will be inefficient. The soil contains certain elements which are valuable in producing a certain crop. Year after year if this crop is produced on the same soil the necessary elements are gradually exhausted and the crops become less abundant. The farmer who uses his soil without replacing any of the fertility is robbing his farm, he is trying to buck nature's laws. One of these laws states that you cannot get something for nothing and that is what we do, or try to do, when we crop our land and give nothing back. By assisting nature in the working out of her laws we are benefited. Increasing the fertility of the soil increases the crops grown on that soil and nature's laws are obeyed to the advantage of the farmer and his farm.

Some Examples.

A flock of pullets are ready to lay in the winter but do not lay because of poor feeding methods. Short rations are given them and what is the result? Nature uses the little food material that is available to keep the bodies of the fowls in as good a condition as possible.

The dairy cow is a delicately constructed animal of the greatest value to man. Nature has given her great powers but man must assist nature to produce the best results. Short rations are not an economy. The cow that is half fed and furnished ice water to drink will not be a good producer, as nature will use the food as much as possible to conserve the energy of the animal.

The peach orchard that is not thinned may produce a large quantity of small peaches. The trees are devitalized and the next year the crop may be very small. Nature knows that the tree must have some time to recuperate. When man assists nature the tree does not overbear, its annual crops will be of better quality and the orchard will be longer lived.

The farmer who tries to beat nature by excesses of any kind will meet with the same fate as the soil and the tree. He will lose in efficiency. There may be some places where man can beat nature and not pay the bill. I have never heard of the place and it is certainly not on the farm.

Ingham Co. R. G. KIRBY.

ROAD BUILDING IN MICHIGAN.

Road building operations will be active in Chippewa county this year. The Chippewa commission has let contracts for over 33 miles of state reward highway, to be finished by December 1.

Mecosta county has started work on 15 miles of trunk road, as links in a main line from Grand Rapids to Cadillac, and will complete same this year. The state reward on these roads will be \$1,600 per mile.

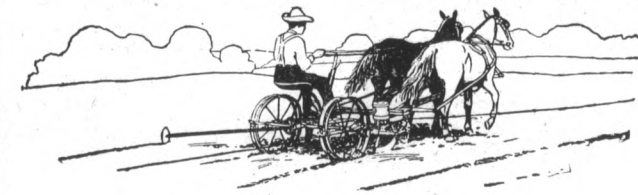
Jackson county has let contracts for building six pieces of road as follows: Parma trunk line, one mile, to W. S. Hoag, Springport, \$6,800; Sandstone trunk line, one mile, to Lowery Gravel Co., \$6,303; Grass Lake trunk line, one mile, to Greenville Gravel Co., \$6,995; Rives trunk line, one mile, to A. C. Mitchell, \$4,698; Henrietta, one and a half miles, to W. E. Fleming, \$3,449.30.

The Ottawa county road commission has let the contract for building two miles of concrete road on the Holland-Grand Haven stretch to Klaas Bolens and D. M. Cline of Spring Lake, the price being 99c per square yard.

Ingham county has been investigating the plan of bond issues as followed in Genesee, Kent, Ottawa and Berrien counties. Only 44 miles of the 250 miles of road planned for Ingham have been completed.

Kent Co. ALMOND GRIFFEN.

John Deere Implements



John Deere Corn Planter The Accurate "Natural Drop" Planter

ACCURATE—because it has the "Natural-Selection" drop—an improvement over all other methods.

Kernels do not have to be tipped on edge to enter the cells. Surface of hopper bottom and openings to seed cells are oblique, or sloping. The kernels naturally move toward and fill the cells.

A full-variable drop planter. Plants two, three or four kernels as desired—all you do to change number in the hill is to move foot lever.

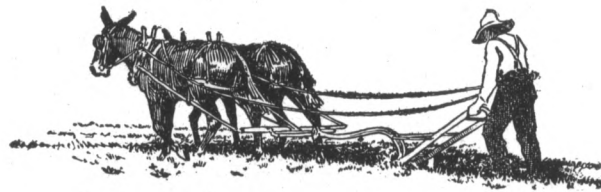
Drilling distances varied, and change from hilling to drilling or back to hilling made just as easily.

All corn plates for this planter have 16 cells. Therefore, the same drilling distances are obtained with one plate as can be secured on other planters that require 8, 12 and 16 cell plates.

The gears are always in mesh and can be shifted at any time (even when in operation) to change drop or drilling distances.

Investigate the John Deere tip-over hoppers, quick detachable furrow openers, underhung reel and disc marker without rope.

Write for free booklet, "More and Better Corn."



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.

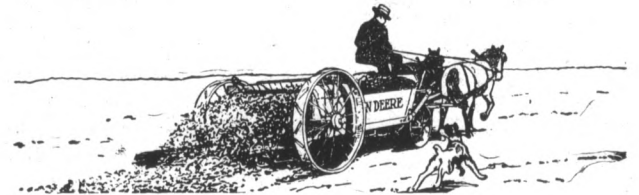
Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point. The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

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 Spreader

The Spreader with the Beater on the Axle

ONLY hip high to the top. Wheels out of way when loading. Mounting the beater on the axle is patented. Write for Spreader booklet.

Three exclusive John Deere Spreader features:

- [1] Beater on the axle—nothing else like it. [1]
- [2] Revolving Rake—load moving back to beater revolves the rake. Draft actually less. Even spread certain—no bunching. [2]
- [3] Ball Bearing Eccentric Apron Drive—requires no attention. Performs wonders in the working of the spreader. [3]



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 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.

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



INTERNATIONAL AGRICULTURAL CORPORATION



CINCINNATI WORKS!

Manufacturers of the Popular

High Grade Buffalo Fertilizers

Dealers in

FERTILIZER MATERIALS

Satisfied Customers Everywhere. Ask your dealer for prices, or write direct to

International Agricultural Corporation

Cincinnati Works, Lockland, Ohio, or Mr. Fred D. Hubbell, Wentworth Hotel, Lansing, Mich., State Agent.

RELIABLE AGENTS WANTED.

FIELD SEEDS At Wholesale Prices

We save you money on your Seed Bill. Write for our Special Money-Saving Price List and get our reduced prices on Best Quality Guaranteed Seed. You should know about our low prices. Write at once and be convinced. Everything sold Guaranteed Satisfactory or money refunded. Don't pay two profits on Grass Seed. Our seeds are sold subject to Government test. Have new re-cleaned **Alfalfa**, \$9.60 bu.; **Timothy**, \$3.00; **Clover**, \$9.30; **Sweet Clover**, \$5.40; **Alsike** and **Timothy**, \$5.00. Have low prices on Seed Corn, Oats, Wheat, Speltz, Barley, Cane, Millet, Cowpeas, Rape, Vetch, Sudan Grass, Potatoes, Artichokes, and all Farm and Garden Seeds. Write today for 100-page catalog. Free samples and special low prices on seeds you require. Will send Free 60-page book on Growing Alfalfa to those who wish it. Write at once, as we can save you money. **A. A. BERRY SEED CO., BOX 231 CLARINDA, IOWA**

ALFALFA

Our seed is genuine Northwestern, dry-land, non-irrigated, from old fields and of exceptional purity. It grows strong, hardy, permanent plants. Beautifully illustrated catalog containing full description and samples FREE.

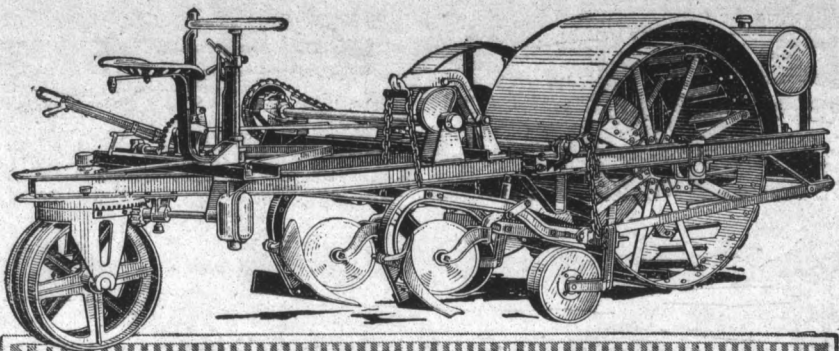
THE C. E. DUPUY COMPANY
PONTIAC, MICH.

SWEET CLOVER

White Blossoms; the greatest money-making crop of today. Wonderful opportunities for the farmer who starts growing it. Builds up worn land rapidly and produces heavy, money-making crops while doing it. Excellent pasture and hay; inoculates your land for alfalfa. Easy to start; grows on all soils. Our seed all best scarified, hulled, high-germinating and tested. Quality guaranteed. Write today for our big, Profit-Sharing Seed Guide, circular and free samples. **AMERICAN MUTUAL SEED CO., Dept. 931 48d and Roby St., Chicago, Illinois.**

SCOTT'S RED CLOVER

Look out for Buckhorn and other weeds in clover this year. Very little pure seed to be had. Ours is practically free from weed seeds and waste. Much the cheapest to sow. All other varieties of field seeds. Samples and instructions "How to Know Good Seed" Free. Write today. **O. M. SCOTT & SONS CO., 136 Main St., Marysville, O.**



\$750

**Cash F.O.B. La Porte
Complete With Plows**

And here's what you get—a tractor especially designed for the small farm—tractor and plows combined in one machine—control of entire outfit from operator's seat—an all purpose machine, as good for belt work as on the draw-bar.

The Rumely will plow your truck patch as well as your hundred acre field. It prepares your ground, pulls your binder, does your hauling and belt work.

Our catalog explains the ease of control, the steel gears all encased and running in oil, roller bearings throughout, heavy duty four-cylinder engine and rigid frame construction.

Same design in three-plow tractor, "12-24," \$975.00 f.o.b. La Porte. Address nearest branch for catalog.

ADVANCE-RUMELY THRESHER CO.
La Porte (Incorporated) Indiana
Battle Creek, Mich.

RUMELY "8-16"
All Purpose Tractor

Farm Notes

Seeding Clover in Oats.

I have a field that I would like to sow to oats and seed it, but it is uncertain seeding with oats. Do you think I could be more sure of getting a good catch if I waited until the oats were harvested, and then disked the ground and harrowed it good and sowed it to timothy and clover? How would alfalfa do sown after oats were harvested? The soil varies from sand to heavy clay.

Newaygo Co. B. J. O.

It is a far better plan to seed clover in oats, using only a thin seeding of oats, (say not more than one bushel per acre), than to depend on seeding after oat harvest. If the land is in a fair state of fertility and is not in an acid condition, there is a better chance of getting a seeding which will withstand the winter than to sow on the fitted stubble after the oats are harvested. This plan works all right in some seasons when there is sufficient moisture to make the plan successful, but is a much more uncertain proposition than seeding to clover in a moderately thin stand of oats. Alfalfa would stand an even less chance of success than would clover on ground which had never grown alfalfa before, if the same is seeded after the oat crop is harvested.

If difficulty has been experienced in getting a stand of clover on this land, it would be profitable to have a test made to determine whether lime is needed to correct an acid condition, and in case the soil shows acid reaction, it would be profitable to apply lime when fitting the ground for oats in the spring. In a great many cases where the loss of clover seeding is attributed to dry weather, the loss is at least in part due to an acid condition of the soil which can be removed by a liberal application of lime.

Sweet Clover for Heavy Land.

Which is the best kind of sweet clover to sow on heavy land to build up the soil, and about how much per acre?

Lapeer Co. A. G.

Unless it is very deficient in vegetable matter, we do not advise the use of sweet clover on heavy land. The chief value of sweet clover as a soil improver lies in the fact that it will succeed on soil containing less organic matter than almost any other of the legumes which can be used for that purpose.

On heavy soil as a forage crop and soil improver alfalfa is very much superior to sweet clover and will be a more profitable crop to grow. Where it is necessary to add a considerable quantity of vegetable matter to the soil quickly, sweet clover may possibly find a profitable use on such soil where the land is used for wheat in the crop rotation, so that it would be undesirable to introduce vetch, although some other legume, as peas or cowpeas, could be used to advantage for this purpose and the results could be secured more quickly than with sweet clover.

Sweet clover is best adapted to the improvement of sandy, gravelly soils which are very low in their humus content and upon which other legumes cannot be made to succeed as well. White sweet clover is the most valuable variety for forage or soil improvement purposes.

generally require tile laid out in parallel strings from four to eight rods apart. Any makeshift of tiling that does not conform to this general plan is likely to be unsatisfactory and to require changing sooner or later. It is a mistake to suppose that tile are required only on the low land, since experience has taught hundreds of farmers in this part of the state that fully as much benefit is secured from tile on the higher portions of their farms as on the low lands.

A second mistake that beginners are likely to make is to use tile that are too small. Tile one and a half to two inches in diameter were formerly used, but I am informed that most of the tile factories in Ohio no longer make anything smaller than four inches, and I know that few factories in Michigan make sizes less than three inches. In those sections where farmers have had the most experience with tile the tendency is to use the larger sizes, nothing less than four inches being used except for short branch strings and the majority of farmers think that three-inch tile are too small for any condition.

Tile drainage is an opportunity that is knocking at our door. It is the key that will unlock stores of plant food for our crops. It is the first number on the farmers' program of efficiency. Anything that will increase the number of properly tile-drained farms will immediately increase profits of farming and permanently benefit the community.

GETTING READY FOR MICHIGAN FAIRS.

The Michigan Association of County and District Fairs met in Grand Rapids and elected these officers: President, F. A. Bradish, Adrian; vice-presidents, Perry F. Powers, Cadillac; Don L. Beardslee, Greenville; Chas. E. Anderson, Hartford; secretary and treasurer, Frank Rathsburg, Imlay City. The next meeting will be held in Detroit.

The Fruit Belt Agricultural Society met at Empire, Leelanau county, and elected the following officers: President, E. R. Dailey; vice-president, H. L. Nessen; secretary, Andrew Johnson; treasurer, Frank S. Hardy. Plans were made to increase live stock exhibits at the coming fair.

The Clinton County Society met at St. Johns and voted to bar out all gambling at the fair this year, including the cane racks, candy wheels and other mild forms of chance, as well as the more serious offenders. The society is in good shape financially, with a balance of \$902.69 on hand. The new officers are: President, R. L. Bixby; vice-president, C. J. Sowle; secretary, C. S. Clark; treasurer, Merritt Ride-nour.

The Cass County Society asks the supervisors for \$1,000 in support of this year's fair at Cassopolis and if the request is not granted no fair is likely to be held. The new officers are: President, James Springsteen; vice-president, Milo Cook; secretary, Ralph W. Hain; treasurer, Leo A. Parker.

The Chippewa County society will provide a race track and grounds for base ball, foot ball and lacrosse at the Sault Ste. Marie grounds. The new officers are: President, S. T. Handy; secretary, L. S. Holden; treasurer, A. W. Clarke.

The Isabella County Society met at Mt. Pleasant and reports showed cash receipts of about \$5,500 for the past year and a balance after debts were paid, of over \$200. Officers for 1916 are: President, Dr. J. J. Walkington; vice-president, Robt. Wardrop; secretary, T. W. Ayling; treasurer, C. J. Myers.

Reports read at the annual meeting of the Hillsdale County Association show funds on hand of very close to \$5,000. The officers elected are: President, Loren R. Eagle; secretary, C. W. Terwilliger; treasurer, Wm. Merchant.

Kent Co. ALMOND GRIFFEN.

Pull Stumps 10 Days-FREE

You can clear from 10 to 50 acres in ten days with the Faultless Stump Puller, and then decide whether you want to keep it or not—before you pay us any money. The Faultless Stump Puller develops greater power, with less strain on the team and the machine, and is easier and safer to handle than any other stump puller made. Backed by the strongest guarantee.



Right Now We Are Making A Special Low Price Offer

It means a slash in stump puller prices that will surprise you. Write for full information at once and save money. Our Free Book gives much valuable and reliable information on clearing stump land, with numerous illustrations. Write for it today. Faultless Stump Puller Co. Dept. M Cresco, Iowa



More Dollars From Your Silo



Just tear out this advertisement, write your name and address on the margin, and mail to us, we'll send you, free, the Silberzahn Book, which tells you why the low down steel frame construction of the

Silberzahn
Light Running

enables you to fill your silo most economically. Gehl Bros. Mfg. Co., 154 S. Water Street West Bend, Wis.

**AGRICULTURAL LIME
The Strongest in Ohio**

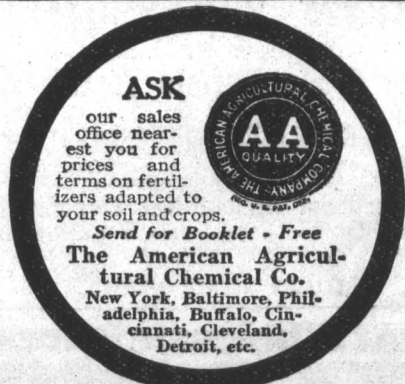
See Ohio Official Report. The Scioto Lime & Stone Co., Delaware, Ohio. FREE SAMPLES AND BOOKLET upon request.

**FOR SALE
CARBONATE OF LIME**

Running 88% pure. This lime is in ideal condition for applying to the soil, either mechanically or by hand. Write for prices in car lots or in small quantities. E. I. du Pont de Nemours & Co., Bay City, 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.

For Sale Cheap: A Bates all steel 30 horse tractor and plowing outfit, made in Lansing. J. W. ROBINSON, HOLT, 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.

TILE DRAINAGE IN THE SAGINAW VALLEY.

(Continued from first page).

value. He can also help the farmer avoid some serious mistakes when he undertakes this improvement.

Follow a Definite Plan.

In the first place not a tile should be laid until the farmer has a more or less definite plan of the system for the whole farm. To run tile hit or miss through the farm to drain out certain "low spots" is a piece of bad management that is almost sure to result in needless expense of time and material. Most of the soils of the Saginaw Valley are comparatively level and

Everbearing Strawberries

IN April, 1915, we set 1000 plants of the Superb variety of fall, or ever-bearing, strawberries. The plants were obtained at \$15 per thousand; practically every plant grew, and all proved true to name.

The ground had been previously manured; during the summer cultivation was kept up thoroughly, and by fall the rows of plants were continuous, although originally set two by three feet.

Blossoms appeared on these plants soon after they started growing, but they were kept picked off until the first of July. The first full quart of assorted berries was picked on August 12, and taken to the local hotel, where it was bought by one of the guests for twenty-five cents. From that time on our troubles in supplying the market demands were surprising. People from the hotel called us up on the phone two or three times a day, asking us to be sure and save them some berries.

When the wet weather came in September, the strawberries cracked open; otherwise, we could have shipped quantities of them to the resorters who had returned to their homes in the city, leaving orders and checks in payment for same.

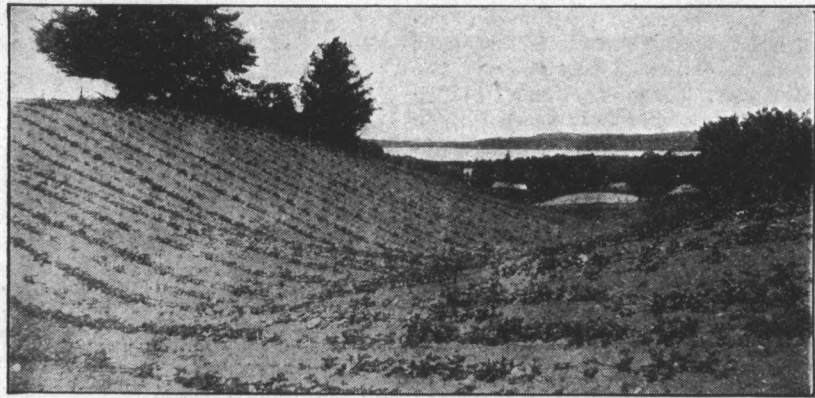
The season's experience has demonstrated that the problem in the ever-

ners from our fruiting patch we will have more than enough plants for an acre.

While the ever-bearing strawberries have not paid expenses the first season, yet they have done more than the Warfield and Dunlap, or other ordinary types, which, of course, bring no return whatever the first season. The income from fruit has been \$14.39; if we put a value of \$10 per thousand on the undug new plants, and estimate their number at eight thousand, then the investment has indeed been a profitable one.

Given proper climatic conditions for ripening, the Superb berries are indeed well named. The fruit is quite uniform in shape, being round-conical; well filled and colored to the tip; firm fleshed, with a pleasing aroma and flavor.

Our experience proved, however, that as with peaches and grapes, so with the berries; given a fall with much cloudy and wet weather, and the fruit fails to develop a sufficient sugar content, and gets filled with a surplus of juice which is flat in flavor. The berries, too, decay rapidly in such weather, and become splashed with sand. A large part of our late fall crop was fit only for cooking, under



Everbearing Strawberries Promise Increased Revenue from this Fruit.

bearing strawberry trade is not to find a market for the fruit, but fruit for the market. Probably the coming season will provide a much larger crop from these same plants; during the present season we harvested 58 quarts of fancy fruit, and 14 quarts of second grade fruit. We fixed the price at 25 and 15 cents respectively, most of the sales being made direct from patch to consumer. No doubt a higher price might have been realized by seeking out a special market, but that would require a supply of berries for filling orders, which, of course, we did not have.

Only eight hundred of our plants were allowed to fruit; the blossoms were removed from the other two hundred, so that all the energies of the plant might go to forming running plants for an increase plot for next year. Twice during the summer these runners were pinned down with soil, so that they might root early in the season. Fully two thousand plants have resulted from this practice. One plant has approximately sixty runners attached and all rooted. Other plants have no runners at all, but an enormous development of crown. One cannot help but wonder if it would not pay to improve the variety by selecting for propagation only those plants which produce a moderate amount of runners, storing up considerable energy in reserve for fruit production the next year.

At two cents apiece, however, there should be a good profit in selling the plants; we figured that our plants cost us that by the time we paid express charges, and trimmed them up, so that when the neighbors come asking for a few plants for the home garden, we let them go at that figure. We are saving the plants, however, for an increased acreage next year. It requires about 7,200 plants for an acre, setting two by three feet; by using the run-

such conditions of weather as prevailed. However, the very rains which cut down the production of berries served to increase the production of new plants, so that we have no complaint to make.

Others who have tried the ever-bearing strawberries claim that they will produce almost continuously the second year. We expect to watch results with the early crop of Superb in comparison with Warfield and Dunlap next year, and feel sure of one thing; that while a late frost may destroy the blossoms of the latter varieties, the Superb will keep on blossoming after the frost.

Benzie Co. E. H. BROWN.

PLANNING THE GARDEN.

By laying out the garden intelligently and considering carefully the nature and requirements of each vegetable, much labor may be saved in the summer cultivation and the production of the garden may be materially increased. Before the time for planting arrives, a plan should be drawn. Vegetables requiring the same cultivation should be planted together; those needing the same length of time to reach maturity should also be placed side by side. It is much better to have the planting plan made up well in advance than to do it by a hit-or-miss method. Garden planning in winter means economy of time, labor and money in spring and summer.

Plan to keep the garden busy. This may be done by arranging one crop to follow another in close succession. Plant spinach, radishes and early lettuce side by side and set tomato and pepper plants to follow the spring crops. The early crops will be ready to take off before the middle of June and in pulling them out, spaces may be made to set the plants. Thus the early crops may be used until July and



The Red Ball on "Ball-Band" is right where you can see it

All over America men look for the Red Ball when they buy rubber footwear. Eight and one-half million men won't buy any other kind. They know that the Red Ball stands for value that they cannot get in any other kind.

Begin to figure the cost of rubber footwear on its cost per days wear, and you will see that "Ball-Band" gives greatest service at lowest cost.

"BALL-BAND"

is made right and stays right. "Ball-Band" boots are vacuum cured. During the vulcanizing this process causes a tremendous pressure on the fabric and rubber, and makes the boot one solid piece.

More than 50,000 stores sell "Ball-Band" Rubber Footwear. If you have any difficulty getting "Ball-Band," write us, giving the name of your merchant. We will see that you are supplied.

Write anyway for our free booklet, "More Days Wear" Tells how to treat rubber footwear so as to get the full worth of it.

Something New

"Ball-Band" Light Weight Rubbers for street wear in Men's, Women's and Children's sizes. They are "Ball-Band" Quality and Value. Look for the Red Ball on the sole.

MISHAWAKA WOOLEN MFG. CO., 319 Water St., Mishawaka, Ind.
"The House That Pays Millions for Quality"

Planet Jr. Farm and Garden Tools

cut down work and boost your crops

Old-time farming no longer pays—these scientific tools do the work of 3 to 6 men, give bigger yield, and save their cost in a single season. Invented and made by a practical farmer and manufacturer, with half a century's experience. Planet Jrs are strong and lasting. Every tool fully guaranteed.



72-page Catalog (184 illustrations) free!

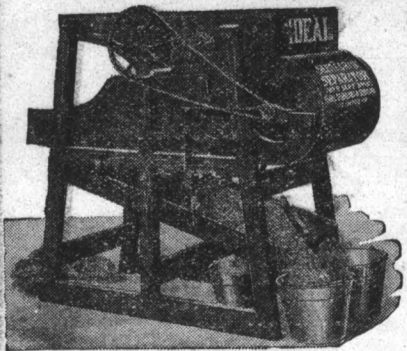
Describes over 70 tools, including 12 entirely new ones and improvements to our Seeders, Wheel-Hoes, Horse Hoes, Harrows, Orchard- and Beet-Cultivators. Write postal for it!

S L Allen & Co Box 1107M Philadelphia

No. 25 Planet Jr Combined Hill and Drill Seeder, Double and Single Wheel-Hoe, Cultivator and Plow is a splendid combination for the family garden, onion grower, or large gardener. Is a perfect seeder, and combined double and single wheel-hoe. Unbreakable steel frame. Capacity—2 acres a day.

Planet Jr 12-tooth Harrow, Cultivator and Pulverizer is stronger, steadier in action, and cultivates more thoroughly than any other harrow made. Non-clogging steel wheel. Invaluable to the market-gardener, trucker, tobacco or small-fruit grower.

WHY PREPARE YOUR SOIL FOR POOR SEED WHEN—



YOU CAN GET \$35 Ideal Seed & Grain \$12.50 SEPARATORS AT AND SOW GOOD SEED

The Ideal is a Combination Fanning Mill and Grader that insures the sowing of plump grain that is free of weed seed and is offered at a price below manufacturer's cost. Don't envy your neighbor's big yield nor deny yourself and your family the pleasure from money so earned for the price of this cheap convenience. Better buy an Ideal and have no regrets. The small lot of machines offered in this sale were forfeited in payment of a loan when the Ideal Company went out of business. We were able to buy the lot at a very low price and are closing them out rapidly.

Range of Work Covered

The Ideal machine does work under special patents that no other machine can do. It cleans and separates such seeds as wheat, oats and clover. It cleans and separates Buckhorn from first grade clover, dodder and other foul weed from alfalfa; clover and timothy from Red Top; mustard from oats; grades wheat and oats into three grades and cleans and grades broom corn seed.

Ideal Users Enthusiastic

"I am glad to find in the Ideal a really satisfactory seed and grain separator. It gets rid of the ruinous, foul seed and grades upward the quality of seed planted."

E. P. MITCHELL, Tipton, Ind.
"I saw this mill demonstrated at Wabash, Ind. I bought because it did the finest work of any mill I have ever seen."

WALTER CURTIS, R. F. D. No. 10, Wabash, Ind.
"I have tried this mill on wheat and timothy seed. It surely does good work. My neighbor, Bert Moore, says his Ideal is ideal for grading oats."

T. B. DAVIS, R. R. No. 2, Pennville, Ind.
Further information if desired.

Fair Warning! These Ideal Separators cannot last much longer. Prompt action means you will get a complete \$35 machine at \$12.50. Delay means disappointment. Send cash or check with order. The margin is close and we cannot afford to open accounts.

REFERENCE: Dunn or Bradstreet reports at your local bank.

Lyman Bros. 227 East Ohio Street, INDIANAPOLIS, IND.

30 Years in Business

100,000 Customers

It pays to buy from a house that is well established and known to be reliable. Especially is this true of seeds and trees.

Garden Book Free. Write for your copy of our 1916 illustrated Garden Book. It will help you in planning your Garden and Orchard planting. All kinds of Vegetable, Field and Flower Seeds, Fruit and Ornamental Trees, Shrubs and Vines.

Apple, 6c; Peach, 8c; Plum, Pear and Cherry, 15c each, all graded; Concord Grapes, \$2.00 per 100. Freight paid on tree and plant orders of \$10 or more.

GERMAN NURSERIES AND SEED HOUSE
Box 241 Beatrice, Nebraska

SEEDS & TREES THAT GROW

GARDEN FIELD FLOWER SEEDS

have helped careful planters to better gardens for over sixty years. Our "Pioneer Brand" Grass and Clover Seeds are famed for Purity. Whether you make garden for profit or pleasure, our high-bred strains will make returns from your work bigger and surer. Give us a chance to prove this by writing to-day for our

FREE Farm and Garden Guide

A dependable 80-page guide with money-saving prices for everything needed in garden and field. Full of practical culture directions, with true-to-nature illustrations. It's free for the asking. Please write for it today—a postcard will do.

The Page-Phillips Seed Co.
Box 170 Toledo, Ohio

"HOLCO" Seed Book

Tells What, How, When to plant Your Vegetable and Flower Garden. Sent Free on Request.

The Holmes-Letherman Seed Co. SEED GROWERS
Drawer D. CANTON, OHIO.

KANT-KLOG SPRAYER
9 sizes of sprays from one nozzle. Starts or stops instantly—saves solution and work. Send for catalog. Agents wanted. Rochester Spray Pump Co. 189 Broadway Rochester, N. Y.

the later crops are at the same time being developed. Early peas will come off the land the latter part of June and beets for winter use may follow. By planting Detroit Dark Red beet by the first of July, nice vegetables for winter use may be had. These will not be large but they will be of much better quality than spring-planted beets. Between the rows of dwarf peas or early potatoes Green Pod and Golden Wax Snap beans may be planted. These will develop quickly and occupy the ground when the first crop is removed.

Plan successions of such vegetables

as peas, sweet corn and snap beans. By planting Alaska, Nott's Excelsior and Telephone peas on the same day green peas may be enjoyed for several weeks. Another planting of Telephone two or three weeks later will add still farther to the season. In the same manner Cory, Golden Bantam and Stowell Evergreen sweet corn will afford a succession.

Finally, in planting the garden order the necessary seeds and supplies early. Do this before the time for planting arrives that there may be no delay in getting the seeds into the ground at the right season. C. H. G

Winter Meeting of Fruit Growers

THE Oakland County fruit growers again demonstrated the fact that they were live wires, when the Oakland County Horticultural Society entertained the Michigan State Horticultural Society at its annual mid-winter meeting. The meeting was held at Pontiac, February 15-16 and was well attended by fruit growers from all parts of the state. The large local attendance and the great interest shown in all the subjects indicate that fruit growing in Michigan is by no means confined to the western part of the state. In welcoming the state society to Pontiac, C. A. Bingham, president of the Oakland County Society, spoke of the rapid development in fruit growing among the farmers of this section of the state. It is only a few years ago when the state meeting which was held at Pontiac drew a very slight crowd, but two years ago a summer

meeting at which the Oakland county people were hosts, was one of the most successful ever held by the state society. In spite of the fact that Oakland county was becoming the playground of Detroiters, Mr. Bingham said that fruit growing was and would continue to be one of the foremost lines of activity in Oakland county.

Efficiency in Fruit Production. The first morning session was given over to the discussion of "Efficiency Methods in Fruit Growing," by F. A. Wilken. The thought brought out was that, due to the fact that fruit growing has been so profitable in the past, many orchards have been set, and consequently there will be a great increase in production, making the competition for markets stronger. This would necessitate improvement in the methods of fruit growing in such a manner as to lower the cost of production and marketing so that fruit growing would continue to pay a profit, and at the same time enable the consumer to buy the fruit at lower cost. All thriving industries pass through a period of growth during which crude and extravagant methods are generally used, but as these industries mature the work must become more efficient so

that they may maintain their places among the activities of the world. The development of the automobile business was cited and fruit growing, especially apple growing, was compared with it. Suggestions with reference to the improvement of cultural methods, including cultivation, spraying and pruning, were given, and with reference to marketing the value of co-operation, honesty and advertising were brought out. In a future issue of the Michigan Farmer these will be given in detail.

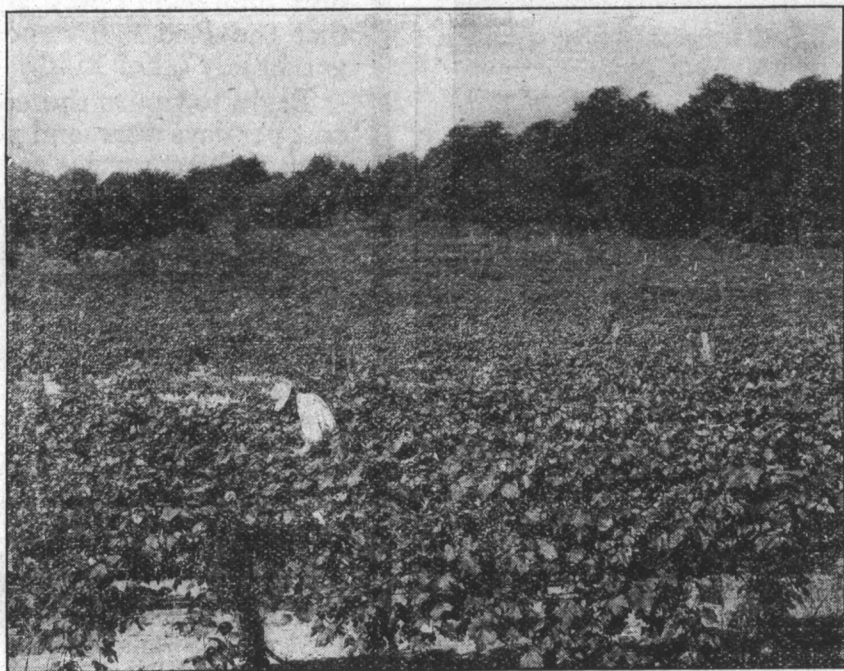
The Keifer Pear Question. The first subject taken up at the afternoon session was "The Growing of Pears and Cherries," by Robert Crawford of Armada. Mr. Crawford brought up the perennial discussion of the Keifer pear. He said he found this variety valuable because it was practically an annual bearer and did not cost

Suggestions on Peach Growing.

Mr. Roland Morrill, one of Michigan's most prominent peach growers, spoke on "The Peach Industry." Mr. Morrill's long experience in this work makes his advice on the problems of the peach grower much sought after. He said that in the future we would give more attention to the unseen things in peach growing; we would give more attention to the effect of cultivation and fertilization upon the root system of the tree and our understanding of root development would be better. After several years of careful investigation he found that at the time of the hardening of the pit of the peach there were formed many small hairlike roots which would come close to the surface to come in contact with the light and air, but which, after the pit was thoroughly hardened, would die. He was sure that these roots had some relation to the hardening of the pit, and on account of their apparent value he said shallow cultivation was very important at that time, as deep cultivation would destroy them. He never started cultivation until after blossoming time, as experience has shown him that cultivation makes the blossoms more susceptible to frost injury. He believed in thorough cultivation until late in August, and if the season is especially dry, even later. He did not feel very enthusiastic about the summer spraying of peach trees because of the susceptibility of peach foliage to injury. He thought it very important to keep the foliage in healthy condition. The peach industry has developed so that the peach grower has not as broad a market as he used to have. Every large consuming center now has a good-sized peach producing section near it, which supplies it with fruit. The large peach growing sections of the south will compete with Michigan fruits on the larger markets. This will make it necessary for the Michigan grower to develop more efficient marketing methods and to advertise to put before the public the quality of Michigan peaches.

Orcharding on a Large Scale.

Under the title of "From Start to Finish," Mr. J. E. Merritt, of Manistee, told of his extensive operations in clearing land and setting it to orchard. The stumps were all pulled by machine and then put in large piles for burning. After burning, the land is gone over several times to pick up the smaller brush. It is then plowed and gone over again to pick up what brush is uncovered in plowing. The work of clearing is done so thoroughly that after



Vineyard of R. A. Smythe, Secretary of State Horticultural Society.

meeting at which the Oakland county people were hosts, was one of the most successful ever held by the state society. In spite of the fact that Oakland county was becoming the playground of Detroiters, Mr. Bingham said that fruit growing was and would continue to be one of the foremost lines of activity in Oakland county.

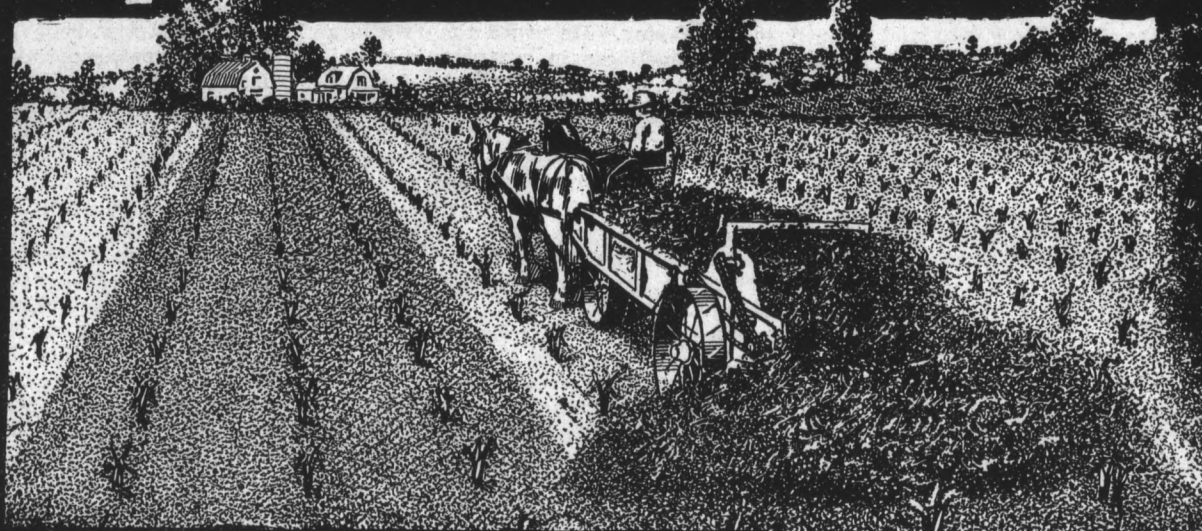
Efficiency in Fruit Production. The first morning session was given over to the discussion of "Efficiency Methods in Fruit Growing," by F. A. Wilken. The thought brought out was that, due to the fact that fruit growing has been so profitable in the past, many orchards have been set, and consequently there will be a great increase in production, making the competition for markets stronger. This would necessitate improvement in the methods of fruit growing in such a manner as to lower the cost of production and marketing so that fruit growing would continue to pay a profit, and at the same time enable the consumer to buy the fruit at lower cost. All thriving industries pass through a period of growth during which crude and extravagant methods are generally used, but as these industries mature the work must become more efficient so

very much to raise. If one has other good varieties of fruit, such as the Spy or the Red Canada apples, he can usually sell his Keifer pears to advantage because these quality varieties would "sugar coat" the Keifer, but if the Keifer was grown exclusively Mr. Crawford thought there would be many years in which it would be difficult to sell the fruit. With reference to growing cherries he favored a more extensive planting of this fruit in the southeastern part of the state because the market was good. He thought it was practically the only fruit adapted to city yard growing because it needed comparatively little spraying on account of its freedom from scale.

Horticulture as an Occupation for Women.

"Women in Horticulture" was discussed by Miss Addie Sly, who has been very successful in conducting a fruit farm at Birmingham. Miss Sly has become active in farming because she wished to keep intact the old homestead which has been in the family for more than eighty years. Miss Sly saw no reason why a woman should not take as active an interest in farming as a man. By employing men who work for their interests, and

Spreads a Load in 3 Minutes



Covers 3 Rows of Corn at Once

That means a saving of half your time and a *big saving* on machinery and horseflesh. It means that with the New Idea you can do two days spreading in a single day. Our wide spread saves you half a mile of travel on every acre.

You need a spreader because it's the only method of preventing the loss which comes from improper spreading. Manure has a fertilizing profit of \$8 to \$10 per acre. You are losing a great part of this when you try to spread by the fork and wagon method. The manure lying piled in the barnyard loses by leaching and firing and you lose in the field because it's not spread right. When too thick the soil is burned and when too thin, or when patches of ground are missed, there is not the proper fertilization.

The only sure way is to use a spreader. Not just any spreader but one that spreads wide and evenly, does not choke and can always be depended on to do its work right. You'll find such a machine in the low down, scientifically built

NEW IDEA

Registered U.S. Pat. Off.

It spreads 6 inches beyond the wheels and gives a total spreading width of 7 feet, covering 3 corn rows. Can be loaded as high as a wagon box,—the double cylinders insure thorough pulverization and prevent choking. Light draft.

The two cylinders pulverize *all* the manure, and the whirling distributor throws a fine even spray of pulverized manure across three corn rows. It spreads beyond the wagon tracks, and you don't have to drive over the spread manure.

The New Idea has a variable spread of 3, 6, 9, 12, 15, 18 loads per acre. Spread is controlled by convenient levers or can be entirely thrown off by convenient foot latch. The variable feed enables you to give each part of the soil exactly the amount of manure needed.

Wheels track but front wheels turn under for easy turning. Endless chain conveyors with steel bars scrape the spreader bed clean. No manure shreds left to freeze in winter and rot in summer.

The New Idea is built like a wagon box, solid bottom with heavy cross pieces supported by the full width of the side. Rear end properly braced to prevent spreading of the bed and cramping of the bearings.

A Really Successful Chain-Drive Manure Spreader

A simple mechanism that can't strip, break, freeze or get out of order. The New Idea heavy chains will not break even under unusual pressure. Direct axle feed prevents loss of power. Sprocket at one end drives cylinder and cams at other end operate feed. We guarantee the New Idea to spread without choking when operated according to directions. We also guarantee it for one year against breakage from **any cause** and guarantee it indefinitely against defective material or workmanship.

"Helping Mother Nature" Big Special Book } **FREE**

No matter how much you know about farming the book will present to you some new facts on fertilizing. Ask the Dealer for a copy and free demonstration of the New Idea. If there is no New Idea dealer near write us for free copy and illustrated catalog.

NEW IDEA SPREADER CO.

151 FIRST STREET "Spreader Specialists" COLDWATER, OHIO

We also build the "NISCO" — a special low down type with narrow front truck.



This is the **FREE BOOK** Write for it or ask the New Idea Dealer





Smooth Potatoes

With usually a thirty to forty per cent. increase yield assured to every grower if he will rid his seed potatoes of potato scab and black-leg by using

FORMALDEHYDE
The Farmer's Friend

the official Standard seed cleanser to prevent smuts and fungus; flax wilt. Potato scab and black-leg once in the ground may persist for many years. The U. S. Department of Agriculture recommends cleansing seeds with Formaldehyde solution to prevent spread of potato diseases and smuts of grain. Formaldehyde in pint bottles at your dealer, 35 cents. Big illustrated book sent free.

PERTH AMBOY CHEMICAL WORKS
100 WILLIAM STREET NEW YORK 5

FRUIT TREES

Ornamentals, Evergreens, Shade Trees, Tested Seed, Vines, Berry Bushes, Everblooming Roses, Cannas and gorgeous bedding plants. Hardy Perennials that last for years—all offered direct to you from America's largest growers. Select, robust stock; over 1200 acres along Lake Erie, 7 kinds of soil, 48 greenhouses. Up to 400 carloads sold yearly. No risk. Safe arrival and satisfaction guaranteed.

Photo-Catalog FREE!

Tells all about planting and care. Prices and accurate descriptions of thousands of choice varieties. Special offers on high grade collections. Seed, Plant, Rose, Fruit and Ornamental Tree Catalog, 192 pages fully illustrated, sent FREE! Write today.

The Storrs & Harrison Co.
Dept. 207 Painesville, O.

FRUIT TREES AND HOW WE MAKE THEM

For 30 years our True to Label Trees have been finding their way into Michigan Orchards. They have made good as proven by men who are fruiting them. Our book on Spraying, Pruning, Selection of Varieties, etc., will interest you. It's free with catalog.

H. S. WILEY & SON, Main St., Cayuga, N. Y.

EVERGREENS

38 Hardy Tested Varieties
Best for windbreaks, hedges and lawn planting. Protect buildings, crops, stock, gardens and orchards. Hill's Evergreens are Nursery grown and hardy everywhere. From \$1 to \$10 per hundred. Hill's Evergreen book and 50 Great Bargain sheet sent free. Write today. World's largest growers. Est. 1855.

D. HILL NURSERY CO., DUNDEE, ILLINOIS
Box 2300 Evergreen Specialists

CONDON'S NEW RADISH

Finest Early Radish in Existence. Ready to eat in 14 days. To introduce our Northern Grown "Sure Crop" Live Seeds we will mail you Big Package "Condon's New Lightning Radish" and our Mammoth Illustrated 1916 Garden and Farm Guide. Send name and address on postal today sure.

Condon Bros., Seedsmen, Rock River Valley Seed Farm, Rockford, Ill.

APPLES

You MUST have our new catalogue if you want to know real values in nursery stock. Apples, Peaches, Pears, Berries, Ornamentals, etc. It is FREE. Write for it today, SURE, and compare the values with others. It will save you money. Drop a postal NOW to

Progress Nursery Co., Troy, O.

10 APPLE TREES

To introduce our enormous nurseries to you we are making this exceptional offer—10 good apple trees, many choice varieties, at this low price. Write, Big Seed and Tree Book Free. Galloway Bros. & Co., Box 186 Waterloo, Ia.

PEACH & APPLE TREES 2c & up

Pear, Plum, Cherry, Small Fruits, Strawberry Vines, Nuts, etc. GENUINE HALE BUDDER from Bearing J. H. HALE TREES. Genuine Delicious Apples. Cat. Free.

TENN. NURSERY CO. Box 44 Cleveland, Tenn.

Trees—Roses—Vines

in small or large lots at wholesale prices. Catalog and Green's Fruit Book—FREE. Green's Nursery Co., 29 Wall St., Rochester, N. Y.

the ground is well cultivated it looks as if it had been under cultivation for several years, it is so clean. It has cost Mr. Merritt from \$40 to \$50 an acre to do the clearing and to get the ground in shape for setting the trees. This high cost is due to the fact that it is more costly to clear pine stump land than any other, and also because the work was done so thoroughly. Mr. Merritt's talk was illustrated by a large number of slides showing the land before and after clearing, and also the various operations necessary to clear it.

The evening meeting was an open one and was well attended by both country and city people. Mr. John I. Gibson gave an illustrated talk on "Making Michigan Win," in which he told of the good work that the Western Michigan Development Bureau has done in the development of the northwestern part of the state. Aside from doing a large amount of publicity work to get new settlers, the Bureau does everything to encourage the farmers to use modern methods. It also uses its influence in improving the rural social conditions, and the rural school. It has done much toward fostering the good roads idea and has worked up a market for high-class fruit under its trade name, "Sunny Ripe."

Improving the Home Grounds.

Prof. Thos. Gunson, of M. A. C., spoke on a subject dear to his heart, "Home-making and Surroundings." One of the chief reasons why farm life is not attractive to many is the unattractive surroundings that most farm homes have. Too little attention is given to beautifying the grounds which the farm buildings occupy. In this age of commercialism we have also cut away all shrubbery and brush along the roadsides, thus making the public highways barren and unattractive. One of the most important things in rural progress is the development of the aesthetic side of country living. There is nothing we can do which will do this and make the farm attractive to a good class of people than to give attention to beautifying the rural community.

The Wednesday morning session was opened by Mr. Geo. Low, of Bangor, who talked on "Orchard Heating." Mr. Low and several other prominent fruit growers of Bangor have had practical experience along this line, and believe that orchard heating is practical for this state and has come to stay. He told of his methods of accomplishing his work and the arrangements he had for storing the oil and filling the heaters in the orchard. An article on this subject by Mr. Low will appear in our columns soon.

Controlling the Aphis.

Mr. G. F. Leonard, a former M. A. C. man who has had considerable experience with tobacco extracts for spraying purposes, spoke on "Aphis Control." He gave the results of work along this line that various experiment stations have been carrying on. The conclusions reached as a result of these experiments are that the most effective time to spray for aphis is when the leaf buds are about ready to burst, the best spray to use being a 40 per cent tobacco extract. This can either be used alone or with the lime-sulphur solution. It has been found that lime-sulphur is most effective in the control of scale if the spraying is delayed until this time, therefore it is becoming a common practice for fruit growers to wait as late in spring as possible with their scale spraying. The addition of the tobacco extract at this time will keep the aphis in check if the work is done thoroughly. If tobacco extract is used alone the addition of soap improves its spreading and sticking qualities. All tobacco extracts are commercial products, therefore it is advisable for the grower to follow the directions given by the manufacturer. There has been no method found of making tobacco extract at home, which would produce a satisfactory mixture.

Prof. C. P. Halligan gave an instruc-

ive talk on "Spraying." He said that in improving our methods of fruit growing, we should take into consideration the limiting factor in fruit production. This factor varies; in one orchard it may be cultivation, in another it may be fertilization, and not infrequently it is spraying. He urged the importance of timeliness in spraying and the necessity of doing thorough work, if good results are expected. There are several new kinds of spray material which are proving very efficient, and there is a rapidly growing use of these newer sprays. The powdered form of sulphur spray has given very good results in the control of the scale, but has not proven entirely satisfactory for summer spraying on account of causing some foliage injury. The use of the oil sprays is also increasing very fast. The advantage in using a spray of this kind is that it spreads on the tree and therefore does not make necessary as exacting work to insure covering the tree thoroughly as does lime-sulphur. The use of a dust method of spraying is again claiming attention, but the results of experiments carried on in this state do not warrant the recommendation of this method. There has been much inquiry regarding a substitute for Bordeaux mixture on account of the high price of copper sulphate, but nothing has been found which will take the place of Bordeaux in the control of fungous diseases of the grape.

Prof. L. R. Taft recommended late spraying for scale with lime-sulphur at the strength of one gallon to eight and the summer use of lime-sulphur on all tree fruits except peaches and apples at one to 50. For apples strength should be one to forty. The use of arsenate of lead with lime-sulphur in summer sprays would control practically all of the chewing insects which attack the fruit and the use of the tobacco extract in the scale spray would make quite certain the control of the aphis. The scale spray when applied to the peach before the middle of March would also keep in control the curl leaf. It has also been found that a fall spraying for curl leaf has been very effective.

Mr. Albert Griggs, of Pontiac, told of "The Development of Horticulture in Oakland County." As Mr. Griggs' experience extends to the early days of this development, his talk was an interesting account of Oakland county horticultural history.

Marketing Fruit.

In his talk on "Packing and Marketing Fruit," Mr. Roland Morrill spoke of the value of co-operation in making marketing methods more economical. Honesty is one of the most important factors in the development of a good market. One should never pack fruit which he would not care to buy himself. The uniformity of grades and the use of a trade name or some distinguishing mark will help one greatly in establishing a reputation for his goods. When this reputation is established, one will have no trouble in finding a good outlet for his fruit.

Mr. Luther Hall, of Ionia, who has one of the most profitable Spy orchards in the state, spoke on "Producing Apples." He said one of the chief essentials in getting good production was to have vigorous trees. He believed in liberal fertilization, but his method of doing this is somewhat unusual. He found that the best fertilizer for his orchard was good Illinois corn. This was made in available form by the pigs which were pastured in the orchard. Mr. Hall's method of orchard soil care is briefly as follows: He plows as early in spring as possible and after thorough cultivation the orchard is sowed to peas and oats in August. After this is harvested he turns in the hogs and feeds them corn. He has found that hogs will never bother the trees or root up the ground to any extent as long as they have plenty of feeding material. Shortly before harvesting time he mulches the trees by putting 150 to 200 pounds of

straw around each tree; this is done to conserve the moisture and also to prevent the fruit which drops to the ground from bruising. He has a local sale for this fruit at 50 cents a bushel in the orchard. Mr. Hall believes in shaping his trees so that they can carry a large load. He is a firm believer in the high heading of trees, especially of the Spy, because after bearing a few crops the limbs bend down so that they are easy to pick. His trees have borne an average of seven barrels each a year. He has found that when trees have a light bloom the fruit will be large, but if the blossoming is heavy the fruit will be small, even if the tree is thinned. This is because the tree is weakened by producing so much bloom and pollen. With reference to his unusual methods of orchard culture, he did not claim that they would be adaptable to all conditions, but said he was entirely satisfied with them and had no thought of changing, as he thought it was not wise to change bait as long as the fishing was good.

WITH THE MICHIGAN FRUIT GROWERS.

The Mason County Fruit and Produce Association held its first annual meeting in Summit, and re-elected officers as follows: President, Jesse Houk; vice-president, Theodore Erwin; secretary, Guy Hawley; treasurer and sales manager, Martin Abrahamso; director, C. D. Kistler. The society was successful beyond expectations during the year, with apples and peaches the leading crops handled in carlots. The former membership of 12 will be largely increased this year.

Van Buren county members of the Hartford Fruit Growers' & Farmers' Exchange met at Hartford and elected the following officers: President, J. T. Wilkinson; vice-president, C. H. Mowry; secretary, Edward Corrette; treasurer, G. W. Merriman. Two standing committees were appointed as follows: Arbitration, E. W. Ewald, Jacob Geisler and Edward Skinner; orchard inspection, Arthur Dowd, J. T. Wilkinson and Chas. S. Johnson. The Exchange has already placed an order for 300 barrels of spray material for use of members.

Preparations are being made to raise large quantities of cranberries in the bog south of Alpena city, in Alpena county. Marked improvements have been made in clearing up the ground and an extensive acreage has been platted to vines. The Lakeside Cranberry Company is back of the experiment and has engaged E. V. Shaw, formerly of the Cape Cod cranberry belt in the east, to manage operations for another year. Mr. Shaw believes that Alpena cranberries will in time be as well known as the Cape Cods.

W. H. Pratt and Sons, who recently bought the Bowe farm of 160 acres in northern Berrien county, will set out the farm, except 10 acres of river bottom land, to fruit. They will set 40 acres of apples, 10 of peaches and 10 of strawberries, adding other fruit later.

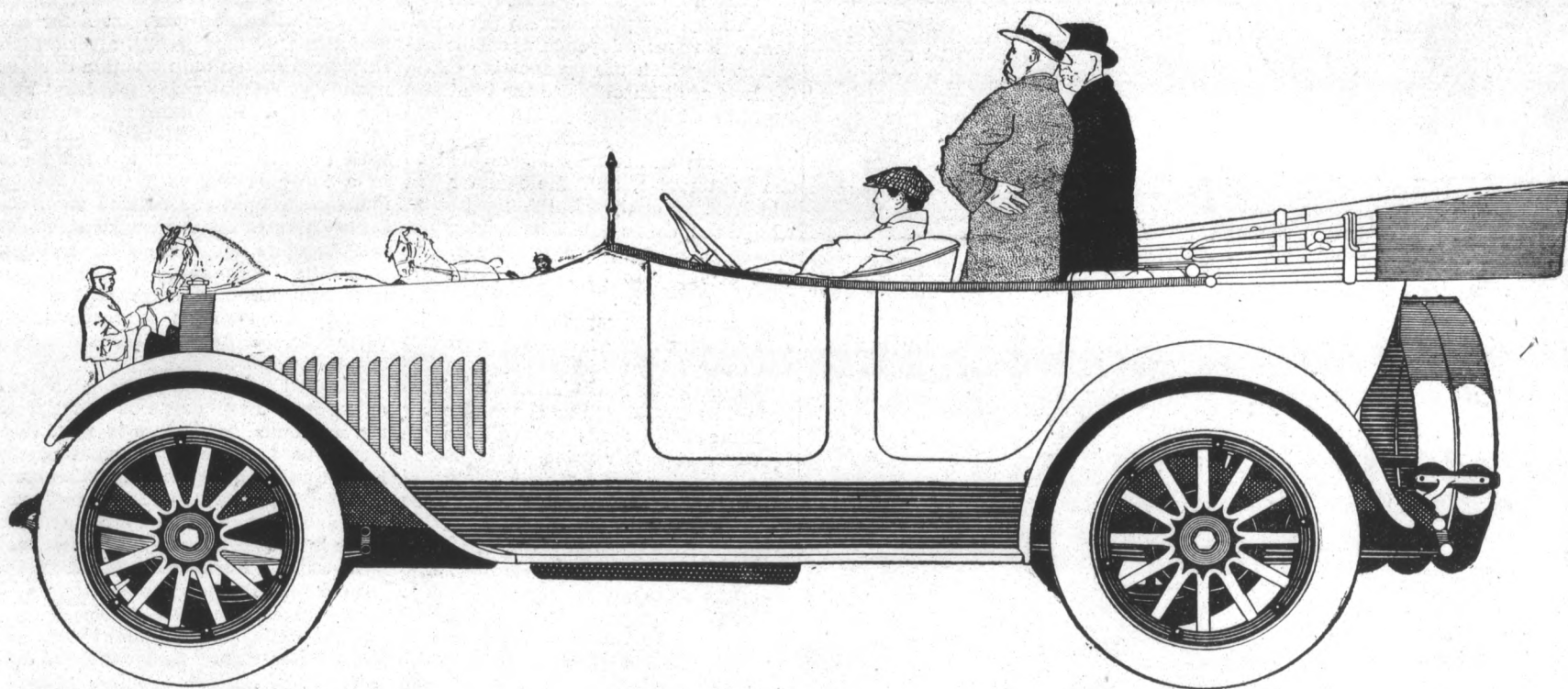
ALMOND GRIFFEN.

CATALOG NOTICES.

Isbell's seed annual for 1916 sent on request by S. M. Isbell & Co., Jackson, Mich., is a 120-page illustrated catalog listing a complete line of farm, garden and flower seeds offered by this firm. It contains many illustrations of the product of Isbell seeds.

The 1916 spring catalog of Painesville Nurseries will be sent upon request by the Storrs & Harrison Co., of Painesville, Ohio. This is a profusely illustrated catalog of 192 pages listing a complete line of farm, garden and flower seeds and plants, together with ornamental trees and shrubs for spring planting.

Hayes power sprayers manufactured by the Hayes Pump & Planter Co., Galva, Ill., are fully illustrated and described in a 48-page art catalog sent upon request to interested readers of the Michigan Farmer. It illustrates and describes every detail of construction of the full line of sprayers manufactured by this company.



IT'S A COMMON-SENSE CAR TO DRIVE—THIS 3400 R. P. M. CHALMERS

Great energy in an engine will do one of two things.

It will either deliver great power or great all-round performance. But it won't do both.

It was up to Chalmers engineers to decide which of the two would be the more desirable in the new 3400 r. p. m. Chalmers.

In early road and laboratory tests of this phenomenal engine's energy they found that it developed superfluous power.

The might of this small engine was amazing; the temptation to let it deliver its full measure of might was tremendous.

But Hugh Chalmers said: "Might isn't everything. We can't afford to sacrifice performance to power. Keep her horse-power down. Get long mileage on gas—quicken her acceleration. Make her perform."

So it was decided that the headlong power of the 3400 r. p. m. Chalmers must be held in check—by the curb-bit of fuel-economy.

Thus it added mileage to might, made every gallon of gas kick in with 18 miles of wonderful flight, with an uninterrupted flow of silken, miraculous acceleration, and speed up to sixty miles an hour.

But bore, stroke, and engine speed remained unchanged. It still recorded its 3400 revolutions per minute.

As long as motor cars run on gasoline, extreme racing speed will be as prohibitive in cost

to the average user as extreme racing speed in a horse.

A Dan Patch is not for the average stable—an interesting sort of beast, but pretty useless when it comes to the prosaic requirements of the day's work in town or country.

When Mr. Chalmers refused to O. K. the sacrifice of all-round performance to mere brute might, he saved the owner of the 3400 r. p. m. Chalmers from \$150 to \$200 per year in cost of gas.

And so it's a common-sense car for a farmer to drive, because thrift is the first law of scientific farming. This car does not require a big burnt offering on the altar of useless might.

Its pick-up and ease of control will astound you the moment you set foot on the accelerator button. You can shoot ahead of another car's dust at will. No jar or sidesway—always four wheels on the road—you slip up the hills on high—your direction is straight and true.

Big and roomy; 115 inches of wheelbase; Westinghouse starting and lighting; deep, rich, genuine full-grain leather upholstery; stunning color options.

The next time you go to town, go and see this car; you feel already that this is the car you must own.

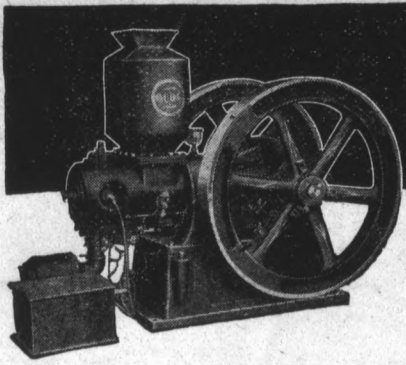
\$1050 Detroit

\$1475 in Canada

Chalmers Motor Company, Detroit, Michigan



Quality First



Let the Olds Do It

Let the **OLDS** engine do your farm work: your pumping, churning, sawing, run your electric light plant, etc.

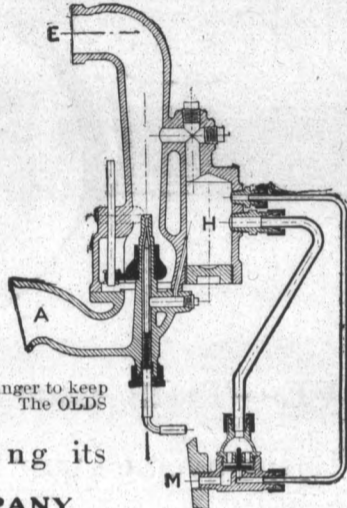
Let the **OLDS** give you satisfaction under our liberal guarantee—lasts you a lifetime, always ready to run, easy to start in coldest weather, develops full rated horsepower.

Let the **OLDS** save you money in fuel expense. The **OLDS** doesn't eat up gasoline. It is known all over the world for the small amount of fuel it uses.

Let the **OLDS** save you trouble. The **OLDS** is so built that it is easy to repair. The cylinder is cast separate from the bed; you don't have to tear down the engine when you want to repair the cylinder. The valves are vertical and in separate cages; you don't have to take off the cylinder head when you need to have the valves reground. These features save you trouble, cost of expert help and loss of time.

Let the **OLDS** mixer prove to you the quality of the engine. It is an exclusive, patented feature. It has no moving parts to wear out: no plunger to keep in repair: no pump to repack. The **OLDS** mixer will never wear out.

Let the **OLDS** number you among its 150,000 satisfied users.



RELIANCE ENGINEERING COMPANY
997 Walnut St. Lansing, Michigan

Cattle Feeding In Michigan

Please give us an article on "Dry Feeding of Cattle in Michigan." What I would like is the personal experience of a practical feeder. **SUBSCRIBER.**

It is impossible to give a complete treatise on cattle feeding within the limits of a single article, which might be published in these columns. So much depends upon the situation in which the prospective cattle feeder finds himself as to the kind and quantity of feeds on hand, the cattle available for feeding purposes, the barn room which may be devoted to the enterprise, and the manner in which it is equipped, the market in which the cattle must be sold when finished and last, but not least, the kind of labor to be employed in the feeding operation.

As a general proposition it may be said without fear of successful contradiction that the principal object of fattening cattle in Michigan or elsewhere should be considered as the marketing of home-grown feeds or available by-products at a fair price, at the same time retaining the fertilizing value of the feeds consumed upon the farm, for its enrichment to the benefit of future crops. Given these conditions, that is to say, a supply of available feed, either grain or roughage, for which it is desired to furnish a home market and suitable stable room in which to conduct the feeding operation, if the feeders are purchased wisely and the feeding operations conducted intelligently, cattle feeding offers a very good solution for the home marketing of these surplus products in an advantageous manner and the possibility of making a fair profit on the transaction from a commercial standpoint. The inexperienced man who attempts cattle feeding in Michigan with the idea of reaping large profits on the feeding operation itself is more than likely to be disappointed.

An Illustration.

As above noted, the first consideration in an enterprise of this kind should, in the writer's opinion, depend upon the supply of feeds for which it is desired to create a home market. To illustrate: the writer found himself this winter with a considerable quantity of alfalfa hay on hand, much of which had been so damaged by the exceedingly unfavorable weather during the haying season as to be saleable only at a price which was considerably below its actual feeding value. As a means of creating a home market for this product, a bunch of fairly good feeding steers was purchased in the Detroit market during the heavy runs which occurred in November when they could be purchased at a price which seemed to offer a fair opportunity of making a margin of profit on the feeding operation besides supplying a profitable home market for this quantity of second-grade alfalfa hay. In order to utilize the hay in this manner it was necessary to purchase the grain to be fed with it. After a careful study of the market good number three corn was purchased before recent advances in the grain market, costing 73 cents per bushel delivered.

Sizing up the Situation.

In view of the general situation, it did not seem reasonable to expect a high market for finished cattle of the grade which these steers would make next spring, for several reasons. First among these was the badly frosted corn in the northern sections of the corn belt which, together with the high price which grains of all kinds now command, seemed certain to cause heavy marketings of cattle from all sections of the country. On this account, after a careful survey of the situation and in view of the fact that the primary object in this feeding venture was to market as much alfalfa hay through these steers as could be profitably done, we decided not to undertake to finish them in a manner to make market toppers but to feed them fairly well and market them in what is technically known as a warmed-up con-

dition. For this reason the steers which showed evidence of having been on scant pasture were fed on a choice grade of alfalfa without grain for the first three or four weeks, after which they were gotten onto a ration of eight pounds of corn per day per head and the second grade alfalfa hay, a bunch of hogs being run in the same yard with the steers. They are fed loose in a large stable with tight bottom mangers around the outside for feeding both grain and hay, with access at all times to an automatic drinking fountain. The manure is hauled from the stable directly to the field with a manure spreader as it accumulates, whenever weather conditions are favorable for this work.

Handled in this way the labor cost of feeding these cattle is reduced to the minimum, being less in fact, than would be the cost of marketing the hay in any other manner. The steers cost \$5.75 per cwt. in the Detroit market, and if they bring \$7 per cwt, or more in the spring, we figure that they will return a fair profit, aside from the value of the feed consumed.

The above facts are related simply to illustrate the attitude which the prospective cattle feeder should take toward the feeding business in order to make it a profitable enterprise. Under different circumstances an entirely different plan should be carried out, depending upon the premises which obtain. If, for instance, the feeder has a surplus of corn silage on hand, this can be profitably utilized in cattle feeding but the plan of feeding should be altogether different. If a different class of feeders are more cheaply available, then the plan of feeding should be varied accordingly. If a local market is available in which the feeding cattle can be marketed to advantage in any particular stage of finish, then that fact should be taken into consideration and a plan adopted which will make the venture most profitable under those conditions.

The Choice of Methods.

The writer has fed cattle of many market grades under a variety of conditions and is firmly convinced that the man who would make a profit in cattle feeding in Michigan must give careful consideration to all of the factors above noted and use good judgment in every phase of the operation from the purchase of the feeding stock to the final marketing of the finished product. Under present market conditions and present feed costs, two methods may be profitably considered with the grade of feeding cattle ordinarily available. One is the warming up process above described which will permit the lengthening of the feeding period if market conditions are not favorable at the time when it was originally intended to dispose of the cattle without entailing a necessary loss upon the feeder. Where cattle are put upon full feed and crowded through a five or six months' feeding period they cannot be held after a desirable finish is obtained without entailing such loss, and at present prices of feedstuffs they must be a very desirable grade of feeders which will finish into a product of exceptional quality and must be sold in an appreciative market, to repay the cost of feed consumed, to stay nothing of making the feeder a profit above that cost.

The other plan which affords a possibility of profit, is a short feed on a full ration which will quickly put the cattle into fair market condition and thus reduce the length of the feeding period to the minimum. This is a plan which finds favor with experienced feeders who desire to find a profitable home market for a surplus grain product, rather than of highly nutritive forage, as was the case with the writer this season.

(Continued on page 278).

Increases Value of Horses and Mules to Clip

When the heavy coat that holds the wet sweat and dirt is removed they get more good from their feed, are healthier and work better. They are more easily kept clean and their improved appearance greatly adds to their selling price. It also pays to clip the flanks and udders of your cows—you get clean milk. Clip them with the famous

Stewart Ball-Bearing Machine

It turns easier, clips faster and closer and stays sharp longer than any other. Gears are cut from solid steel bar. They are enclosed, protected and run in oil; little friction, little wear. Has six feet of new style easy running flexible shaft and the celebrated Stewart single tension clipping head, highest grade. Price complete, only \$7.50.

Get one from your dealer or send \$2 and we will ship C. O. D. for balance. Money and transportation costs back if not satisfied.

CHICAGO FLEXIBLE SHAFT CO.
861 N. LaSalle St. CHICAGO, ILL.

This Lever Controls Entire Row

With West Bend Automatic Swinging Stanchions you can lock up or release 2 to 50 cows at one throw of a lever as easy as you can operate one stanchion with other equipment. This is only one of the many valuable, time-saving, labor-saving features of West Bend Equipment.

The West Bend line includes Steel and Wood Stanchions (automatically and individually operated), Feed and Litter Carriers, Watering Bowls and complete systems. Write today for free catalog showing entire line.

West Bend Barn Equipment Co. 263 So. Water St., West Bend, Wis.

Self-Feeder for Pigs and Lambs

Earns its cost first month—Sold on 30 Days' trial

"Self-fed pigs gain faster" says Iowa Experiment Station. This new self-feeder meets all their requirements. Endorsed by breeders. Saves feed and labor. Six separate bins for salt, corn, tankage, middlings, oil meal, etc. Water proof. Keeps feed dry and sweet. Strong, handsome, well built. Has adjustable trough made of 2 in. lumber. Sliding bar to keep out larger pigs. Automatic agitator.

MAKE MORE MONEY IN HOGS THIS YEAR by having this self-feeder. Sold on 30 DAYS' TRIAL. Write today for full particulars.

A. C. HOYT & CO., Dept. M FOSTORIA, OHIO

CAN'T PLAY POSSUM WITH A SABO TRAP

For Skunk, Possum, Coon, Mink, Wood-Chuck, Etc.

Here Mr. Trapper, is a trap which is placed in the animal's burrow; requires no bait and is positively sure-catch first trip in or out.

Our free booklet explains this wonderful trap; shows how to increase your catch and profits with saving of time and labor; shows how to make trapping a business proposition.

Write for booklet today. Agents wanted.

SABO TRAP MANUFACTURING CO.,
3120 W. 25th St., Cleveland, Ohio

THIS BUGGY \$36.50

Can't be duplicated elsewhere at the price. It's a wonderful buggy for the money and we ship it on

60 DAYS Free Trial

Subject to your approval. It's another proof of Elkhart quality and the saving made you by our factory to user plan.

Write for Big Buggy Bargain Book and read how 43 years experience has taught us how to give the most for the money in wearing quality, appearance, and general satisfaction and by cutting out agents and dealers' profits save you \$25 or more on each buggy.

175 Styles Buggies and 65 Styles Harness are illustrated and described. Don't buy without seeing our book. A postal brings it free. Better write today.

ELKHART CARRIAGE & HARNESS MFG. CO.
714 Beardsley Ave., Elkhart, Ind.

When Writing to Advertisers Please Mention The Michigan Farmer.

CULL BEANS FOR FEED. Write if you can use a car or less.

YOUNG-RANDOLPH SEED CO., Owosso, Mich.

CABBAGE FOR SHEEP.

I would like some advice about the value of cabbage for feeding sheep, and what could one afford to pay for them for that purpose? I have 42 head of high-grade Shropshires and raise early lambs, that is, from the first of February to the first of April. The present season they will drop from February 20 to March 15. I have clover hay, bean pods, and cornstalks for roughage and oats for grain. Would like to know about cabbage as a green food as I have no turnips or silage to feed for milk producing. Cabbage are selling at three cents per head, or less in large lots. What are they worth per pound to feed in my case?

Newaygo Co. O. C. W.

By comparing the food analysis of cabbage with that of rutabagas, silage, etc., one can get a good idea of its value. Cabbage is certainly just as palatable and as digestible as any green succulent food.

	Crude Protein.	Carbohydrates.	Fat.
Turnips	0.9	6.4	0.1
Cabbage	2.3	8.9	0.1
Rutabagas	1.0	8.1	0.2
Corn silage	1.4	14.2	0.7

Corn silage does not contain so much water as either rutabagas or cabbage, in fact only about one-half as much, and this must be taken into consideration. It will be noticed that cabbage is comparatively rich in protein which is valuable. It contains more than twice as much as rutabagas, nearly as much starch and sugar and half as much fat. The analysis will show that cabbage is worth more than rutabagas.

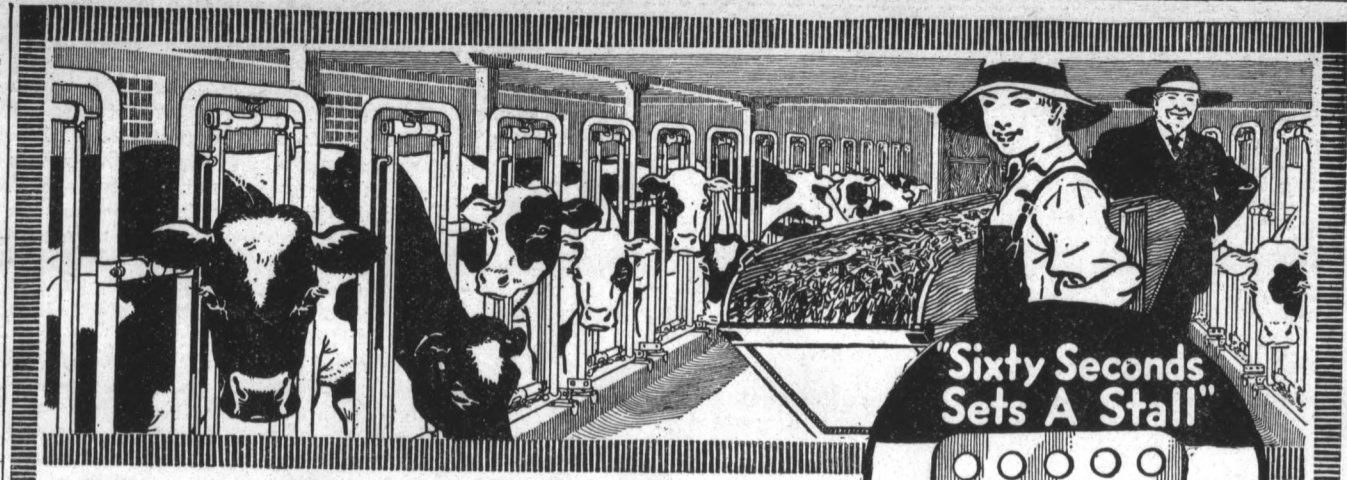
When one considers that silage is much drier, containing 26 pounds of dry matter to 100 pounds of silage, and cabbage contains only 10 pounds, then 100 pounds of silage would contain as much protein as 100 pounds of cabbage. It would contain five times as much starch and sugar, and 17 times as much fat. I would estimate from this analysis that cabbage is worth only about half as much as corn silage and fully as much as rutabagas or turnips. Corn silage is usually figured at \$3.50 to \$4.00 per ton. This would make cabbage worth \$2.50 to \$3.00 per ton, but as you have no succulent feed, you can afford to pay more than that.

COLON C. LILLIE.

LIVE STOCK NEWS.

Several new high winter records for prime lambs, wethers, ewes and yearling wethers have been made recently, and no one appears to think the limit has been reached, so great is the shortage in feeding districts. Most of the winter feeding is being carried on in Colorado, Utah and portions of Nebraska, and the Utah flocks will find their way when finished to the Pacific coast markets. With such a lack of live muttons in the United States, it is no wonder that there is a wide-spread desire to get in the industry, and the few flocks of breeders and feeders that are offered on the markets of the country are sure to bring fancy prices. The range is steadily contracting, and little danger exists of overdoing the production of sheep or lambs in the next few years. In Idaho early lambing is finding general favor, and it is stated that sheepmen are looking for a good many spring lambs in March and April. Recently a sale was reported of 8,000 lambs in Montana for \$8 per 100 lbs. laid down in Billings, the owner shipping them to his feed lots in Colorado, and about the same time a band of four thousand head of stock ewes was purchased by an Idaho sheepman at the unheard of price of \$10.75 per head. They were just good range stock, not pure-breds, all bred and bought for delivery the first day of March. The ewes are expected to produce at least an average of one lamb per ewe, and to shear in the coming spring about \$2 worth of wool per head.

In a feeding trial with 159 pigs, some fed during the summer and some in winter, on the average 4.13 pounds of corn meal were consumed to produce one pound of live weight, the maximum being 5.2 pounds and the minimum 3.24 pounds of meal, says a report from an agricultural station in Ireland. It was found that the average daily gain in weight made by a large number of pigs fed on barley, bran, or corn was practically the same. The pigs fed on barley produced a better quality of pork than those fed on corn.



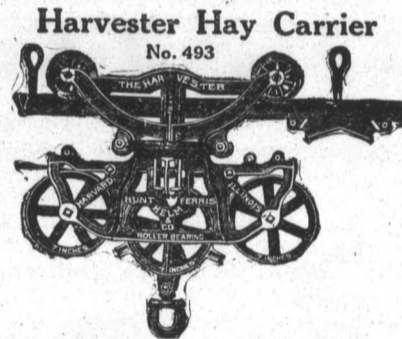
More Cash From The Same Cows—

TIME is money and it "costs" time to take care of cows. And the profit comes from the milk they yield. So—**STAR BARN EQUIPMENT** by cutting labor cost in half, *saves* you money. And by making the animals give *more* milk, and *better* milk, it *increases* your profits. Incidentally, don't forget it offers health insurance as well. That's how **STAR BARN EQUIPMENT** gives you "more cash from the same cows."

It's about time you looked into this matter of cutting costs and raising profits in the dairy business. We'll show you *how*. And—there's no theory about things that are down in cold, hard figures on the record books of the best dairymen in America.

STAR Steel Stalls. Stanchions and Litter Carriers

The next best thing to seeing the goods is reading our catalogues. They are free on request and well worth owning. Send for them. **STAR STEEL STALLS** are built in our factory instead of your barn—they are sold on the Unit System—the Arched Construction gives strength—the Alignment Device is simple and positive—the Star Curb Clamp enables you to finish up the curb with the rest of the concrete work. Our stalls are equipped with the wood-lined **GIANT STAR STANCHION**—it adjusts to fit all size necks—has the One Hand Lock, and the quiet Double Chain Hanging—has a Sure Stop that's automatic and is the strongest stanchion made. The biggest labor saver in the barn is the Star Litter Carrier—we have the most complete line of litter and feed carriers in this country. Roller Bearing—Double Locked Tubs and Swinging Boom to free barnyard of obstructions. Write for our catalogues today.



Biggest in size and value. Roller Bearing and Built for Heavy Duty. Ask your dealer or write us for details.

FREE BARN PLANS

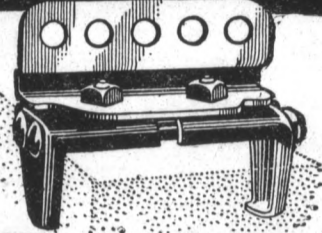
Let us help you design your new barn or remodel your old one. Our Barn Plan Department is at your service and Blue Prints are free. Let us know your wants.

In writing, state whether interested in Stalls, Litter Carriers, Stanchions, Hay Tools or Barn Door Hangers

Star Goods Sold By Best Dealers Everywhere

HUNT, HELM, FERRIS & CO.
13 Hunt Street Harvard, Illinois

"Sixty Seconds Sets A Stall"



The STAR Curb Clamp

(PATENTED)

THIS device, now used on all **STAR STALLS**, marks a revolution in stall setting. Sixty seconds will set a stall—the same length of time will remove one. And you can finish up your curb right along with the rest of the concrete work without the use of templets or anchors and know that the stalls will fit when they arrive.

And the Star Curb Clamp holds a stall as Solid as a Rock.



Write for Literature FREE
—a 159 page, profusely illustrated book of valuable barn data if you write, mentioning the number of cows you keep, whether you intend to build or remodel your barn and when. Also mention what you are interested in. Litter Carriers, Hay Tools, Barn Door Hangers, and we will include catalog of same.

FRUIT TREES and FRUIT PLANTS, ORNAMENTAL TREES and SHRUBS of all kinds. Send for Catalog.

T. B. WEST, MAPLE BEND NURSERY, Lock Box 108, PERRY, O.

LEARN AUCTIONEERING at World's Original and become independent with no capital invested. 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.

Stumps Out—Quick and Easy

Here at last is the land clearing device you have been looking for—the **Kirstin One-Man Stump Puller**—a simple, powerful, practical Puller that one can handle and operate with ease. No big, expensive, cumbersome outfit—no horses to drive—no extra work of any kind. With the Kirstin, one man *alone* clears land quickly, easily, economically. Costs little to begin with—nothing for upkeep—and costs far less to operate than any other hand or horse power puller on the market. In the

Kirstin One-Man Stump Puller

you get every quality needed for land clearing—*strength, power, speed*. The Kirstin is the only stump puller with variable speeds. This gives you a big advantage—*saves much time*. To start the tough stumps, you have enormous *power*; then when the stump breaks loose, a turn of a wrench gives *greater speed*. Any and all kinds of stumps—big, little, green, dry, tough—also trees and hedges—are pulled quick and easy. The Kirstin holds the record for lowest cost of operation. Prove our claims by

Ten Days Try-Out on Your Farm

With the Improved Double Leverage Kirstin you can clear over an acre from one anchor. Also no time wasted in frequent re-setting of puller. The Kirstin is designed to save time. When you get a Kirstin you get a complete, practical Stump Pulling outfit at little cost—and you are protected by the **Kirstin Iron-Clad Guarantee**.

The Kirstin can be used anywhere—on hillsides, in swamps and on rough ground or in thick timber where no other puller could be used. The Government uses Kirstins—so do several of the State Experiment Stations—and thousands of land owners from Maine to California and from Canada to the Gulf are loyal boosters for the Kirstin because it has demonstrated its superiority as a land clearing device. If you have only a couple of acres of stump land you can't afford to let it lay idle. Get a Kirstin now—clear out those stumps—make your idle land pay you a profit.

Get the Kirstin Catalog—Today!

Any one having stump land should get this valuable free book at once. It tells all about the wonderful Kirstin One-Man Stump Puller, the Kirstin Service Bureau, the Payment Plans and fully explains easiest, best, cheapest way to clear your land. Fill out the coupon or mail a postal—today—now!

FREE Book Coupon

A. J. KIRSTIN CO., 5929 Ludington St., Escanaba, Mich.

Please send me your free book on Stump pulling.

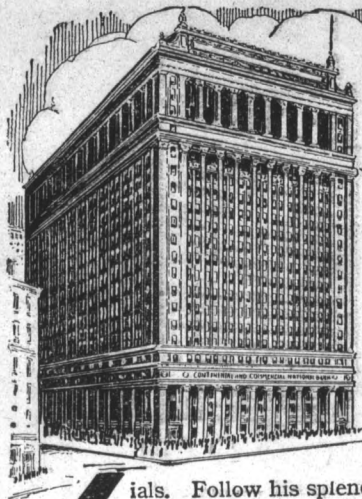
Name

Town

R. F. D. or P. O. Box

State

A. J. KIRSTIN CO., 5929 Ludington St., Escanaba, Mich. 381 E. Morrison St. Portland, Oregon. 4236 Dennis St. Sault Ste. Marie, Ont.



Expert Builders Specify Natco

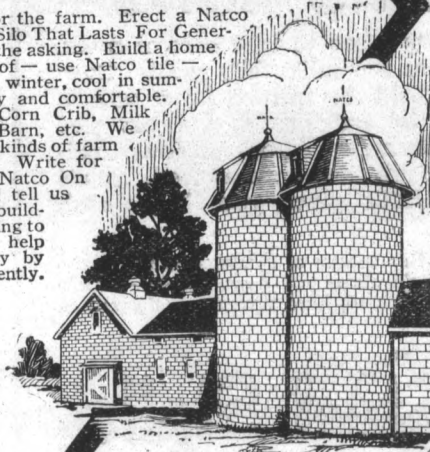
Profit by the experience of the world's greatest architects. The man who designed the building shown here, the Commercial National Bank Building of Chicago, knew that he was using the most lasting and safest of all materials. Follow his splendid example.

Build With Natco Hollow Tile



Natco Corn Crib

Best for the city—best for the farm. Erect a Natco Imperishable Silo—“The Silo That Lasts For Generations.” Catalog sent for the asking. Build a home you'll be proud of—use Natco tile—make it warm in winter, cool in summer, safe, healthy and comfortable. Build a Natco Corn Crib, Milk House, Garage, Barn, etc. We have plans for all kinds of farm buildings—Free. Write for our new book “Natco On The Farm,” and tell us what kind of a building you are planning to build. We will help you save money by building permanently. Write today.



Two 14 x 32 Natco Imperishable Silos on farm of James A. Lowe, Algonquin, Ill.

National Fire Proofing Company

1115 Fulton Building
Pittsburgh, Pa.

23 Factories—Short hauls—
Prompt shipments.

CATTLE FEEDING IN MICHIGAN.

(Continued from page 276).

Cattle feeding is a business which the novice should grow into rather than go into on a large scale. It is a business in which experience counts and in the prosecution of which good business judgment must be used on the part of the feeder. The man who adopts a method or plan of cattle feeding simply because some successful feeder has found it profitable, when the conditions under which he operates may be altogether different, is well started on the road to disappointment. On the other hand, cattle feeding does afford a remunerative market for home-grown products or cheaply available by-products and has proven a profitable specialty for many farmers and a valuable side line for very many more. The average Michigan farmer should, in the writer's opinion, however, look upon cattle feeding as a possibly profitable side line rather than as a specialty.

stimulated for a few days. Give the sow plenty of water as she is in a feverish condition, but take the chill off of it if the day is cold. It is not necessary to feed the sow for a day or two and the first feed given should consist of a small amount of thin slop, which should be gradually increased as the pigs become able to take more milk. In two weeks time she should be on full feed which should consist of a good, laxative, milk-producing feed. There is no better way of feeding the pigs than through the mother, so feed the sow for the greatest amount of milk.

Mo. Agri. Col. L. A. WEAVER.

MAKING PROGRESS IN HORSE BREEDING.

No noticeable progress can be made in breeding animals of any species so long as the breeding stock consists of unsound individuals or is of unknown breeding. The country is over-run with grade and scrub stock of all kinds, and in the breeding of horses there has been much misunderstanding regarding the real requirements. A definite plan for breeding has been lacking. Some farmers have attempted to improve their stock by grading up with pure-bred sires, but oftentimes unsuitable types have been used and all sorts of crosses have been made. The result has been naturally unsatisfactory.

Looking upon breeding as a business proposition, why do some farmers persist in allowing \$5 or \$10 in service fee to make a difference of \$100 in the value of the colt? The higher service fee, with a pure-bred sire, has always proved profitable. There is a ready, appreciative outside market for a good grade colt, while the scrub goes to a local buyer at a low figure.

Although some farmers have come to appreciate the importance of using sound, pure-bred stallions, many farmers have not comprehended that sound mares are important. When a mare has closed her usefulness as a work horse, because of a weakness, she is oftentimes set aside for breeding. So long as this is continued, unsound horses will beget unsound horses, and value in horse flesh will not increase as it could be made to with a little thought in the selection of the best mare for the purpose.

By gradual processes the farming communities of Europe replaced their scrub stallions with pure-breds. They learned by experience that the greatest profits were gained by the production of pure-bred and high-grade stock, and in many breeding centers they would not keep or patronize a non-registered sire. In Great Britain practically all farmers recognize the importance of using pure-bred sires, and only such as are used in various districts whence come the many well-known British breeds of horses.

The great war will devastate Europe of her prize stock, which will mean that countries such as the United States, will need to supply the future world's supply of horses. It would be a good move in the proper direction if every community should organize a horse-breeders' association, on the cooperative basis. Granges and other societies should see to it that the horse receives his due attention along with the other farm animals. Most farmers do not appreciate the value of a horse until they come to purchase one. And why should any farmer buy horses? Every farmer in America should be breeding his own stock.

New York. EARL W. GAGE.

CATALOG NOTICE.

“Will they Freeze?” This question is answered in a booklet sent upon request by the Canton Culvert & Silo Co., Canton, Ohio, manufacturers of Zyro metal silos. It contains testimonials of many users on this point.

Du Pont Magazine, published monthly by I. E. Du Pont de Nemours & Co., Wilmington, Del., contains much valuable information on the use of explosives for the various industrial purposes to which they are adapted. Send for a copy, mentioning this paper.

CARE OF THE SOW AT FARROWING TIME.

Farrowing time is one of the most important times of the year for the breeder of swine. Often a man destroys his chances of success by neglect at this time. While the number of pigs a sow farrows is important, the number she raises determines whether she is being kept at a profit or loss. A sow that farrows five pigs and raises all of them is more profitable than one which farrows fifteen but raises only two or three. The disposition of the sow has much to do with the number of pigs she will raise, but proper care at farrowing time is also an important factor.

A week or so before she is due to farrow the sow should be removed from the other sows and placed in the quarters where she is to farrow. It is best to feed her a ration high in protein and rather laxative in its nature, similar to the feed she is to receive while suckling her pigs. At the Missouri Agricultural Experiment Station good results have followed the use of a ration of corn, 50 per cent; shorts, 25 per cent; bran, 15 per cent; and linseed oil meal, 10 per cent—all by weight. As the farrowing date comes closer the ration should be reduced somewhat. This will bring the sow up to farrowing time in good condition. She will not be so feverish and restless, so there will be less danger of her mashing her pigs when she farrows.

An important precaution to be observed in caring for the farrowing sow is not to supply her with too much bedding; a bushel of wheat chaff or cut straw is good. If the place where the sow is to farrow is warm it will not be needed for warmth. The danger of supplying too much bedding is that the pigs will be covered by it and be smothered or crushed. It may be necessary to change the bedding after the sow farrows but the amount should not be increased.

The less a sow is disturbed at farrowing time the better, and for that reason she should be kept separate from the other hogs. While someone should be on hand, unless she needs assistance it is best to keep away from her. If it does become necessary to help her, do it as quietly as possible.

The pigs should not be chilled before they have dried off and suckled, so if the weather is cold a lantern hung in the top of the cot will be of service. If the sow is gentle it is well to take each pig away from her as soon as it is farrowed and place it in a box or barrel containing some hot bricks covered with old sacks. After the pigs have dried off and are lively enough, they may be put with the sow. In case the pigs do become chilled, the best way to revive them is to dip them in hot water.

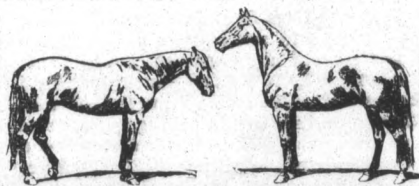
As the pigs are not able to take much milk, the flow should not be

GUARANTEED 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.

SILOS

TILE OR STAVE

KALAMAZOO TANK & SILO CO.
KALAMAZOO, MICH.



THE TIME, NOW!

All the winter long, the troubled owner of a lame horse reads our advertisements. Then, day after day slips away while he talks, laments, listens, takes advice and hesitating—**FAILS TO ACT**—till the Springtime is on him and his horse is not yet able to work. Meantime the thrifty, prosperous, resolute man reads, considers the evidence carefully—**Decides Promptly**—and his horse is quickly cured, worked, too, if needed. That's exactly what happens every winter.

“I Want the Whole World to Know What It Has Done For Me.”—Frank Stevens, of Greenwood, Ind., and adds: “Save-The-Horse has cured bone spavin, thoroughpin, and one with a sprained stifle.”

Our Charges for Treatment ARE MODERATE. But write for our 96 page “**SAVE-THE-HORSE BOOK**”—it is the last word on the UP-TO-DATE treatment of 58 kinds of Lameness—Ringbone—Thoroughpin—**SPAVIN**—and ALL Shoulder, Knee, Ankle, Hoof, and Tendon Disease.—Fully ILLUSTRATED.

WE ORIGINATED the plan of giving a Signed Contract Bond to return money if remedy fails.

But write, **BOOK, Sample Contract and ADVICE—ALL FREE** (to Horse Owners and Managers). Address **TROY CHEMICAL CO.**, 20 Commerce Ave., Binghamton, N.Y. Druggists Everywhere sell Save-The-Horse with CONTRACT, or we send by Parcel Post or Express paid.

ANY silo is better than no silo, but no silo is better than the

INDIANA SILO

Get our catalog and the book that tells what owners of the Indiana Silo think about it.

Write today for early buyers' money-saving proposition. Address nearest office.

THE INDIANA SILO CO., 582 Union Bldg., Anderson, Ind.
Kansas City, Mo. Des Moines, Ia. Fort Worth, Tex.
582 Exchange Bldg. 582 Indiana Bldg. 582 Live Stock Bldg.

SHIPPED ON APPROVAL

The **INDEPENDENT SILO** is manufactured of the best material. Splendid workmanship, dependable anchoring system and you can examine your silo at your station before you accept it.

Send for free catalog.

FREE CATALOGUE

INDEPENDENT SILO CO.
2316 University Ave., St. Paul, Minn.
311 I. O. O. F. Bldg., Indianapolis, Ind.

MAPLE SYRUP MAKERS

The Grimm Evaporator

Used by principal maple syrup makers everywhere. Saving of time and fuel alone will pay for the outfit. Write for catalogue and state number of trees you tap.

GRIMM MANUFACTURING CO.
619-621 Champlain Ave., N. W. Cleveland, Ohio.

THE HOOSIER SILO EXTENSION-ROOF

The **HOOSIER ROOF** will make your silo 100% efficient. No lost space by your ensilage settling. It is the kind of silo roof you have been looking for. Write nearest office for catalogue and learn why **HOOSIER** customers say that the “**HOOSIER ROOF**” ought to be on every silo.

SHEET METAL SPECIALTY COMPANY
302 New York Street, Goshen, Ind.
302 Ann Arbor Savings Bank, Ann Arbor, Mich.

New Edition (264 Pages) of Modern Silage Methods

Only 10c

ENTIRELY a new book—new chapters—tells facts about every type of silo—home made, stave, brick, cement, tile, metal, pit, etc. Tells best for your needs—impartial suggestions for making most profits. 264 pages—10 page index—Copyrighted Nov. 1914, covers 41 silage crops. Send for new book; it beats all previous editions. Write today. Mailed for 10c. Mention this paper. **Silver Mfg. Co., Salem, O.**

The Man, the Cow and the Farm

By W. MILTON KELLY

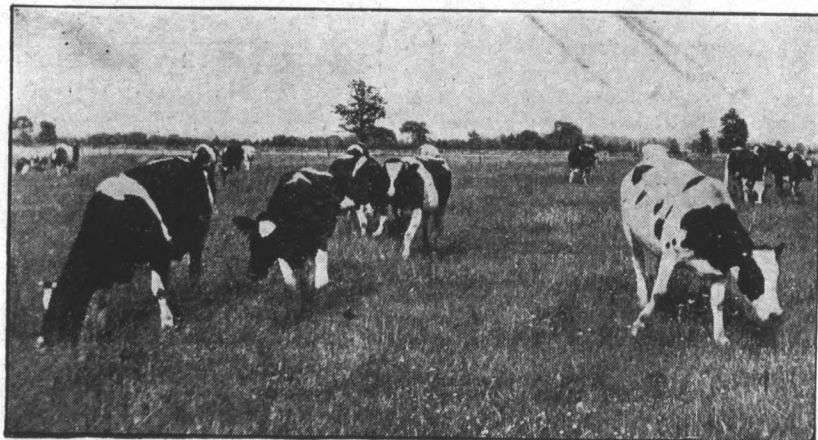
MILK, cream, butter and cheese have long been recognized as among the best of the material good things of life. Natural, then, and not strange, is it that man has commercialized the dairy cow. In all countries where the dairy industry has made its greatest progress we find the highest type of civilization. Scientists have no difficulty in tracing the rise of civilization as concomitant with the growth of the dairy industry; hence I offer no apology for linking the man with the cow at the present time. The man represents the highest type of evolutionary forces which have been and still are at work, but the dairy cow holds a very high place in the scales of development below man. By working together they have been able to achieve marvelous results on the farm.

Successful dairy farming depends largely on hitching up, or as scientists would say, correlating, three entirely different things—the man, the cow, and the farm. There is no sort of use in trying to achieve success with a cow not adapted to the farm or particular line of the business pursued,

plement his pastures, feeds regularly and with good judgment, has an abundance of pure water and salt at hand at all times and keeps the mangers and feeding places clean and sanitary. The dry cows are given special attention so that they may build up their bodies and nervous systems for the great strain of the next lactation period. In addition he studies the question of economy of transport and the best methods of buying and selling dairy foods and dairy products. Efficient buying and selling is essential to successful dairy farming; its profits depend on this.

The Cow.

Several breeds of dairy cattle have been developed under widely different environments and slightly different ideals. The Jerseys, Guernseys from the Channel Islands give rich milk adapted for a high-class milk and cream trade or for butter making. Holland has given us the Holstein-Friesians, the greatest milk-making machines in the world. From Scotland come the Ayrshires with their perfect udders and rugged constitution. Some-



High-bred Cows and Low Dairy Ideals do not go Together.

nor with a man not capable of caring for her, nor with a farm not adapted for growing the food crops necessary for compounding a reasonably well-balanced ration. In the older dairying localities long experience has forced dairymen to give their cows the best of care and grow a variety of crops adapted to their needs, or a cash crop that may be sold advantageously and the fertility removed replaced by purchased concentrates. Either directly or indirectly the farm must support the cows if the business is to pay satisfactory profits.

Improve the Dairyman First.

The better dairyman must precede the better dairy cow. If possible he should take a course at an agricultural college. If this is not possible he should read dairy literature that may now be had for a small sum. The man who is seeking information can obtain it at little expense in these days of expansion of agricultural thought and practice. He must also be a student of economy and efficiency. He must think deeply and act wisely. Knowledge is power only when a man can employ it to set natural materials and forces to work in such a way as to achieve practical results on his farm. It is at this point that many clever business men turn tricks that put their business on a money-making basis where a dairy expert would fail. The dairyman not only needs knowledge, but he must have the ability to put his knowledge into practice.

The successful dairy farmer houses his cattle comfortably, treats them kindly, studies them individually as well as collectively and keeps a record of the amount of milk produced and food consumed. He provides succulence for winter by putting up silage, plans to use up all of the cheap, bulky feeds possible and regulates the amount of grain according to the milk flow. He plans for summer drouths by having some silage left over in the spring, or grows soiling crops to sup-

what variant in type, there is a general similarity and a well-defined relation between form and function in these breeds from different countries. Then come the Brown Swiss with a type so modified that our dairy farmers were skeptical about the first importations, so widely did they depart from our accepted standards. But production records prove that these big-boned mountain cattle are entitled to recognition from our dairy farmers. With these breeds the work of grading up the native stocks into profitable dairy herds has proceeded very rapidly in many localities in this country, with satisfactory results where the work has been conducted in the intelligence of the present era.

Various seven-day, thirty-day and yearly tests, conducted with the most careful scrutiny, have afforded convincing demonstration of the fact that the milk, cream, butter and cheese of commerce need not be made by the cow whose annual yield of milk is limited to 4,000 pounds, but that cows producing from 6,000 to 10,000 pounds are within the possibilities, the comparatively easy possibilities. It remains in large part for the dairy farmers throughout the country to avail themselves of the improved blood produced by enterprising breeders who have made two pounds of milk flow from an udder where only one pound was wont to be produced. Years ago improved blood was not at his command, but today good blood may be had at reasonable prices, and if the 4,000 pound of milk per year cow outnumbers the 6,000 and 10,000 pound cow in the herds of the country it is the fault of the farmer, it is the price of his ignorance or indifference.

Form and Function.

Just how much importance to place upon the relationship of form and function, or production records, is a rather difficult thing to decide. Some men think if you get a cow with a wedge shape, very prominent backbone, a



It costs less to buy a
DE LAVAL
than to buy experience

EACH year some 40,000 farmers, who have bought at one time or another "cheap" cream separators, discard their inferior, cream wasting machines and replace them with clean skimming De Laval's.

These men bought the "cheap" machines because they thought they were "good enough" or "just as good" and that by purchasing such machines they could save a little money. They actually would have been better off in most cases had they bought no separator; for they lost most of the money they spent for the "cheap" machines, besides all the cream these machines have failed to get out of the milk.

No one ever saved money using a "cheap" cream wasting separator or an old or half worn-out machine. No one ever got back the money spent for such a machine by continuing to use it. Those who bought "cheap" machines and got out of the difficulty best are the ones who quickly discovered their mistake, discarded the inferior machines and put in real cream separators—De Laval's.

There are nearly 2,000,000 farmers who have bought De Laval's, and every one of these had just as many opportunities to buy "cheap" separators as any one else. They did not do it and are now money ahead. They have avoided paying the high cost of experience, and their De Laval's have paid for themselves many times over. It always pays to buy a separator of proved, known superiority.

The nearest De Laval agent will be glad to let you see and try a De Laval on your own farm, without obligating you in any way. It is better to take advantage of this opportunity than to pay dearly for your own cream separator experience. If you don't know the local De Laval agent, simply address the nearest main office as given below.

The De Laval Separator Co.

165 Broadway, New York 29 E. Madison St., Chicago
50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER

70 lbs. Milk Cost 36 cts.

Elsie, Mich., H. F. Lewis, has a herd of 16 pure bred Holsteins that are doing fine on Unicorn. He has a 2 year old that is giving 56 lbs. per day with no other grain ration but Unicorn. Also a 5 year old that averaged 70 lbs. per day through January on 14 lbs. of Unicorn feed as a grain ration. These are facts I obtained of him this morning. A. R. LEVEY.

Hundreds of UNICORN feeders are doing as well.

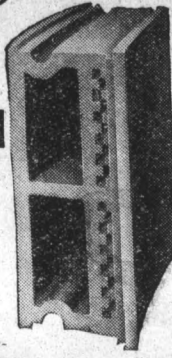
UNICORN DAIRY RATION

is equally profitable for tests or every day dairying. TRY IT.
FOR FACTS AND FIGURES WRITE,

CHAPIN & CO., Dept. M, Hammond, Ind.

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

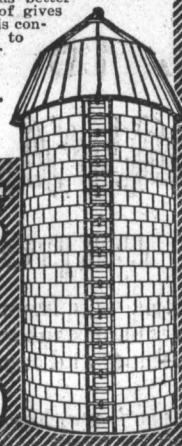
Build Your Silo With This Superior Block



THE ends lap over similar to a "ship-lap" joint—braces tile against tile—gives you the maximum durability of tile—the ideal silo material—defies age, fire, winds, winter frost and summer heat.

Write for Literature and let us tell you about this superior construction in the Lansing Vitri-fied Tile Silo. Reinforced throughout with twisted steel—10% stronger than steel not twisted. New fluted end keeps mortar from slipping before it hardens—prevents air leaks—gets stronger grip. Extended shoulders top and bottom leave only thin mortar line exposed inside and out—silage settles better—less chance for frost—silo has better appearance. Steel hip roof gives extra footage. Doorway is continuous—ladder is easy to climb. Write today for catalog.

J. M. PRESTON CO.
Dept. 309 Lansing, Mich.
Get our offer on Climax Silage Cutters and Bidwell Threshers



Lansing Vitri-fied Tile SILO

bright eye, and all the other points, she will prove a good milker, but I want to say from my own experience buying, breeding and raising cows that the dairy farmer should not place too much importance upon dairy form. The fact that so many cows without the true dairy form have made very creditable advanced registry records is practical proof that the form theory is of little use to the great mass of dairymen. Some men who are breeding pure-bred cattle will give much attention to a fine horn or a certain color; and they will weed out all cows that have not the horn just so; or a black switch. The chances are that the men who are doing that are destroying in many cases animals which have the power to produce the most milk and butter. They have sacrificed them to that fad called form. It is all right in itself for skillful breeders to maintain dairy form within certain limits, but the average dairy farmer will succeed better to breed his cows upon lines of production as determined by the scales and the Babcock test.

The Farm.

The dairy farmer must bear in mind that he is a farmer as well as a dairyman. It is fundamentally wrong to assume that one can build up a highly specialized dairy business that will pay profitable returns without growing an abundance of palatable and nourishing food for the cattle. In many parts of the country where dairy farmers have attempted to set the milk-producing end of their business above the crop-producing end they have met with failure. Dairy cows and crop production are economically inseparable on the well-managed dairy farm.

The selection of the farm is, perhaps, of less importance to the majority of readers than the selection of some particular branch of the industry that is adapted to their present surroundings. It is possible, however, that a brief discussion of the advantages and the disadvantages of certain soils and locations may be of value to those who are contemplating buying a farm and going into the dairy business.

Dairying has so far made its greatest progress in the more northern, colder climates very largely because the handling of milk and its products was cheapened by low temperatures a portion of the year and by cheap ice refrigeration for the summer season. This in the main is the fundamental reason why the northern states lead in dairying, together, perhaps, with one more reason—that northern farmers have learned to care for the cow in winter better than those in the south have learned to do in hot weather. While dairy farmers in different localities face local problems of climate and soil, yet the same general principles of crop growing and cow feeding hold good everywhere.

Best Location for Profitable Dairying.

Location plays an important part in the dairy business as regards markets and classes of production intended. For milk or cream selling the farm must necessarily be located near the market, or near some shipping station. For producing butter or cheese, or raising dairy stock to sell, it may be located far from a railroad or market; in fact, for these purposes, the advantages of a farm, remote from market or public conveyance, may be more favorable than near, as land is much higher and help more expensive near a market or railroad line.

An ideal dairy farm should support luxuriant growths of pasture, meadow grasses and forage crops. Grass is the natural food for dairy cows. With their great capacity for handling large amounts of bulky feed and a correspondingly insatiable appetite for fresh green grass and forage to supply the needs of their digestive systems they derive the most benefit from these crops. Hay and corn silage furnish almost as important a part of the winter ration for the dairy herd as natural grass and green forage do in the sum-

mer. With land that will supply an abundance of grasses and rich protein forage as a basis, the cost of efficient dairy rations is minimized and the cow's health is better maintained than when too much concentrated grain and by-products are fed.

Where the farm is situated a considerable distance from the railway station he will of necessity produce his own feedstuffs as the expense of hauling a long distance will be, if not prohibitive, yet so great that such a course will be inadvisable. Where this is the case he will find it advantageous to practice summer dairying and plan to carry his cows through the winter with such feeds as silage, hay, home-grown grain and a very small quantity of purchased feeding materials. On the other hand, if the farm is situated near a railway station he can find more profit in buying concentrated feedstuffs to balance his home-grown roughage and produce milk during the winter months. Under ordinary circumstances it pays better to plan the herd management so that it will yield a steady income throughout the year.

The Size of the Dairy Farm.

The size of the farm, the proportion of tillable lands to rolling pasture lands, the kinds of soil, the value of the buildings, and numerous other factors, influence the value of the dairy farms. The question of whether it is better to buy a farm near a market or railroad station or go further back and buy cheaper land depends upon the amount of capital one has to invest in the business, his ability to make it yield large profits and the particular branch of the business he is to pursue. Some of the very best money-making farms are situated further back, but, as a rule, it is better to invest in a farm that is situated in close proximity to good markets and near transportation lines, even though the original cost is considerably greater. Well-located farms always find a more ready sale, which is many times an important thing to consider before investing in a farm.

STANDARD OF THE FARM DAIRY HERD.

It seems to be true that the quality of the farm dairy herds is of a much lower standard in practically every way than those of the city dairyman. This really works to the detriment of the farmer and yet he is to blame for the whole thing. The city dairyman who must buy all of his feed knows that he cannot afford to keep a cow unless she is a real producer, therefore he goes out into the country and persuades the farmer to part with the very best cows in his herd. The cow is taken to the city and worked as hard as possible until she begins to fail, when she is sold to the butcher. All of her calves have gone to the same place and thus we see that nothing whatever has been done toward building up the standard of the dairy animals of the country.

Circumstances make it necessary that the city dairyman should make a very close study of the business and knowledge thus acquired enables him to take advantage of the average farmer when he goes out into the country in search of cows to add to his herd. Very seldom does he consider buying the cows that the farmer is willing to dispose of but he ferrets out those that he is confident are the real producers and, be it said to the credit of his shrewdness, he usually gets what he wants.

Such sales are bound to keep any herd down to a mediocre standard because the cows that really produced a profit are gone, also there is but small likelihood of any improvement because calves from poor cows seldom prove more valuable than their dam. Such methods usually allow the quality of the herd to deteriorate.

It is certainly time that the farmers

in the vicinity of the larger cities and towns were educated along these lines, so that the robbing of the country dairies may be prevented. Dairymen in the country must become as wise as the city buyers and refuse to sell the animals that they should depend upon to help them toward greater profits. The practice of this plan would add greatly to the worth of hundreds of herds that are nearby the cities, the place where the opportunity for the greatest profits is found.

There is another way in which the country dairyman can greatly improve his herd and that is to make arrangements with the city dairymen to purchase all of their heifer calves. He can really afford to pay a little more than the market price for the calves inherit qualities that will practically insure their becoming good cows. It is never much work to get these orphans to growing nicely and there is usually plenty of pasturage which can be supplemented by such feeds as are to be had cheaply. When these become milkers the better ones may be selected to add to the herd and the surplus sold. This not only affords a means of quickly building the herd up to a high standard but affords an opportunity for extra profit.

Ohio. S. C.

AN INTERESTING CONTEST AT THE DAIRY MEETING.

An interesting feature of the recent meeting of the Michigan Dairymen's Association at Kalamazoo was the bull-calf weight estimating contest held on Thursday evening, February 10. A pure-bred Holstein bull calf was the prize awarded in the competition. The calf was bred by Judge Williams, of Allegan county, and Marvin C. Haight. He was a grandson of Friend Hengerveld DeKol Butter boy on sire's side and a great grandson of Pontiac Aaggie Korndyke on dam's side. On the date of the contest the calf weighed 167 lbs., 15 ozs. He was won by James Van Aug, of Kalamazoo, who sold the calf at auction, Prof. A. C. Anderson officiating as auctioneer. John M. Larsen, of Chicago, an exhibitor at the show, purchased the calf for \$75.00, and will present him to a friend at Omaha, Neb.

MILKING METHODS.

In tests made in Germany with the Hegelund method of milking, it is claimed that one cow gave seven pounds of milk daily three weeks after calving when milked three times a day, and on the same ration when milked eight times a day, 20 pounds. After three weeks she was restored to the three times a day milking and continued to give the higher amount of milk. Another cow gave from 10 to 12 pounds of milk per day on three times milking and 29 pounds when milked seven times per day, which amount she continued to give when returned to three times milking.

NORTHERN PENINSULA DAIRY-MEN MEET.

The first annual meeting of the Northern Peninsula Dairymen's Association was held at Stephenson, Tuesday, February 15. Much enthusiasm was shown over results and prospects of dairying in the Upper Peninsula. Addresses were delivered by President F. H. Vandenboom, Marquette; W. F. Raven, Upper Peninsula Extension Specialist for Michigan Agricultural College; Prof. A. C. Anderson of Michigan Agricultural College; George W. McCormick, of Menominee. Discussions of co-operative cattle buying were led by County Agents R. G. Hoop-ingarner, of Crystal Falls, D. S. Bullock, of Marinette, Dr. Sawbridge, of Stephenson. County Agent Geismar, of Houghton County, read a paper prepared by W. S. Prickett, proprietor of the Roycroft Dairy Farm upon the Northern Peninsula as a dairy section.

The officers elected for the ensuing year were: President, F. H. Vandenboom, Marquette, (re-elected); vice-president, R. L. Nye, Menominee; secretary-treasurer, C. V. Ballard, Iron Mountain, (re-elected). Board of Directors: U. F. Asslin, Norway, Mich.; L. G. Holden, Sault Ste. Marie, Mich.; J. W. Byers, Iron River, Mich.; W. B. Tromas, Manistique, Mich.; C. E. Peck, Ontonagon, Mich.

Market the Milk RAISE YOUR CALVES

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 steamed—prevents bowel troubles and other ills due to improper milk substitutes.

Blatchford's Pig Meal insures quick, sturdy growth of young pigs at weaning time, without setback or falling off.

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

Blatchford Calf Meal Factory
4382 Madison St., Waukegan, Ill.

L. C. Beard, Hagerstown, Md., writes: "I can say Blatchford's Calf Meal will pay anyone 100% for the calves to raise."



PRICES CHOPPED!

4250 5100 6350


Four sizes of Galloway Sanitary bath-in-oil separators for 1916 and four new low 1916 prices. Six easy selling plans—cash or terms. These new separators skim from 375 to 650 lbs. per hour. They are built in my great chain of factories from the highest quality materials by skilled workmen and sold to you direct to you at one small profit.

If you buy a separator in the next twelve months you should have my

NEW 250 PAGE 1916 BOOK

It tells you how to build Galloway Sanitary separators and gives each of my four new low prices and all my new easy selling plans. A postal gets it. Separators shipped from Waterloo, Chicago, St. Paul, Omaha and Kansas City.

Wm. Galloway Co., Box 183 Waterloo, Iowa



HOOSIER STOVES & FREE RANGES

To try in your own home 30 days free, no matter where you live. Show your friends. Send it back at our expense if you do not want to keep it. Hundreds of thousands in daily use. Perfect bakers, efficient heaters, made of high grade material, beautifully finished, smooth design, guaranteed for years by our Two Million Dollar Bond.

Ask your dealers to show you Hoosier Stoves. Write for our big free book showing large assortment of sizes and designs to select from, explaining our free trial. Send postal today. Write your name and address plainly. No obligations.

HOOSIER STOVE CO.
131 State St., Marion, Ind.



Wanted—A good sober Dairy Man with two good boys able to milk. By the Year.

B. C. Banfield, Owendale, Michigan.

When writing advertisers mention Michigan Farmer

DAIRY PROBLEMS.

The Ration Lacks Protein.

I am milking grade Holstein cows, giving 30 lbs. of milk a day. I wish you would give me a balanced ration. Right now we are feeding corn, oats and barley, equal parts, for roughage; corn stover, bean straw, clover and alfalfa. Bran is \$26 a ton; middlings \$29; cottonseed and oil meals \$36 a ton. We have wheat and cull beans. The cows are not doing the way they ought to. W. N.

Corn, oats and barley do not contain quite enough protein to properly balance a roughage ration of cornstalks and clover and alfalfa hay. If the cows had all the alfalfa hay they would eat, also silage, then ground oats would properly balance. I suggest that you feed wheat bran in place of oats and barley. Mix corn meal equal parts by weight, with wheat bran. This will give you more protein, and by feeding liberally I think you will get results.

Cottonseed Meal Not Necessary.

Will you give me a balanced ration for my cows? I am feeding good ensilage twice a day, good alfalfa hay twice a day. Cornstalks, not frosted, twice a day; grain two-thirds; sound grain: two-thirds sound oats, one-third ground rye, one pound cottonseed meal, fed twice a day. Would it pay me to feed bran at \$26 per ton? Hillsdale Co. T. T. H.

This is a good ration. You can do away altogether with the cottonseed meal and rye by feeding one-third bran with the ground oats. I think it would make a better ration.

Probably Skin Disease.

What is the trouble with my two-year-old registered Holstein bull. He is always licking himself and I can't find any lice on him. I feed cornstalks, hay, straw and silage, and for grain, ground buckwheat and oil meal. I would like to know what to do for him. Could I better my grain by mixing some wheat bran and not so much of the other grain? What is the best grain for calves when skim-milk and alfalfa hay are fed? Would a wash of castile soap do good or harm to the bull? H. L.

No one can tell the trouble with this bull without making an examination. I suggest that you consult your local veterinarian. He ought to be able to tell you the trouble and also to prescribe a successful treatment.

Perhaps too heavy a feed of buckwheat might cause irritation of the skin. Discontinue the buckwheat for a time and give him wheat bran. It would take several days for this to produce any results.

I would not wash him with soap until I consulted a veterinarian. If you wet his skin you must rub till thoroughly dry.

Can the Ration be Cheapened?

How can I reduce the expense of feeding my cows? I am feeding wet brewers' grains at \$6.50 per ton at the rate of half a ton per week to 14 cows, and silage and clover hay for roughage. It is almost impossible to get good corn this year. I am a gardener and am buying everything but the roughage. Can you advise anything for the pox on cows? W. S.

If we reduce the wet brewers' grains to a dry matter basis, it will make a grain ration of seven to eight pounds per day, which, while liberal, is not excessive. Again, the ration can be fairly well balanced by substituting cornmeal and wheat bran equal parts by weight for the brewers' grains. In other words, the brewers' grains furnish protein a little in excess when fed in connection with clover hay. But corn meal and bran are little, if any, cheaper than the brewers' grains, so there would be no reduction in the cost, and as there is no harm in a small excess of protein as long as it does not add to the cost, I see no reason for changing. I can suggest no better or cheaper ration.

Variola, or "Cowpox," is not very pleasant to handle, but it is not usually serious. Wash the teats and udder before milking, with tepid water, use a little soap if necessary, to get it clean. Then apply carbolyzed vaseline or iodiform ointment. If it does not bring relief, use a two and a half per cent solution of chloride of zinc. If this does not readily bring relief then consult your veterinarian.

Here's that new model Reliance—the separator that so perfectly "hit the mark" on just what farmers wanted that over 100,000 were sold within two years' time. ¶Two years ago we decided to use our 20 years of experience and our knowledge of what farmers really need and want in a separator, and produce a new model separator—one that would meet every wish. No ordinary machine would do—it must be a SEPARATOR EXTRAORDINARY; absolutely self-oiling, the greatest cream-getter, and biggest profit-maker yet built.

SEPARATOR EXTRAORDINARY

Achievement of Twenty Years' Experience

Send for Free Book

The New Model Reliance Cream Separator

met with such instantaneous success, such a tremendous demand, that we could hardly keep up with orders.

This machine has twelve big, important features. Write for book showing pictures and giving full description. Learn about the self-oiling device—the latest automobile splash system. Machine oils itself, every time it is turned. No cups—no lubricators. Learn about the wonderful Reliance bowl—guaranteed to skim to $\frac{3}{10}$ of 1 per cent or better, no matter what the density of cream. Get full information regarding all the splendid features of this fine money-maker. Write today.



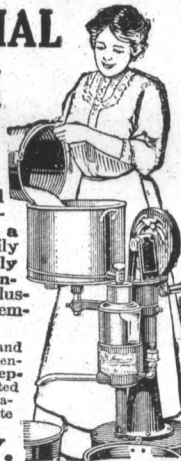
Self-Oiling

Reliance Engineering Company
LANSING = Box 563 - MICH.

\$15⁹⁵ SENT ON TRIAL
Upward
American CREAM SEPARATOR

Thousands In Use giving splendid satisfaction justifies investigating our wonderful offer: a brand new, well made, easy running, easily cleaned, perfect skimming separator only \$15.95. Skims one quart of milk a minute, warm or cold. Makes thick or thin cream. Different from picture, which illustrates our low priced large capacity machines. Bowl is a sanitary marvel and embodies all our latest improvements.

Our Twenty-Year Guarantee Protects You Our wonderfully low prices and generous terms of trial will astonish you. Whether your dairy is large or small, or if you have an old separator of any make you wish to exchange, do not fail to get our great offer. Our richly illustrated catalog, sent free on request, is the most complete, elaborate and expensive book on Cream Separators issued by any concern in the world. Western orders filled from western points. Write today for our catalog and see what a big money saving proposition we will make you. Address: American Separator Co., Box 1061, Bainbridge, N. Y.



Fifty Years Experience

in building good milk cans — is represented in STURGES "Guaranteed Correct Capacity" MILK CANS

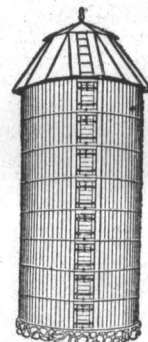
A seal on the wrapper of every can bears a guarantee that the can is "true to measure" and free from leaks. This big feature makes Sturges Cans worth more to you — but they cost no more.

If your dealer hasn't "The Cans of Guaranteed Capacity" — write and we'll direct you to one nearby who has. Want Catalog No. 46? Sturges & Burn Mfg. Co., 508 S. Green St., Chicago, Ill.



Ear Tags FOR STOCK
Tag your stock—best and cheapest means of identification for Hogs, Sheep and Cattle. Name, address and number stamped on tags. Catalog and samples free on request. F. S. Burch & Co., 189 W. Huron St. Chicago

CLOVER CHEAP
Now is the Time to Buy Crop very short. Buy before advance and save money. Get our special low prices and free samples of our pure, Iowa Grown, New Crop Re-cleaned Tested Clover and Timothy Seed. Also Alfalfa, Alsike, Sweet Clover. All kinds grass seed. 100-page catalog free, quoting all field seeds. Save money by writing at once. A. A. BERRY SEED CO. Box 131 CLARINDA, IOWA



NAPPANEE SILOS SATISFY

40% of Corn Crop Saved by using the Nappanee Silo. It holds more than others.

Silo pays for itself every year. No crop failure with a Nappanee Silo on your farm.

Many exclusive features. Nappanee quality means a satisfied customer.

Write for the big free Silo book today. It explains all.

Nappanee Lumber & Mfg. Co. WILLIAMSPORT, PA. NAPPANEE, IND. 15 Lincoln Block 315 S. Madison St.

The ROSS SILO



Keeps ensilage fresh and sweet. Many exclusive features. Doors on hinges; triple, bevel refrigerator type door and frames; oval door frame to fit exact circumference of silo; extra heavy hoops and lugs bent to fit silo; continuous door frame.

Thoroughly Manufactured Our 66 yrs. of manufacturing experience is valuable to you. Write for instructive Silo Book. We also make Enamelled Metal Silos. Agents wanted THE E. W. ROSS CO. Box 14 Springfield, O.

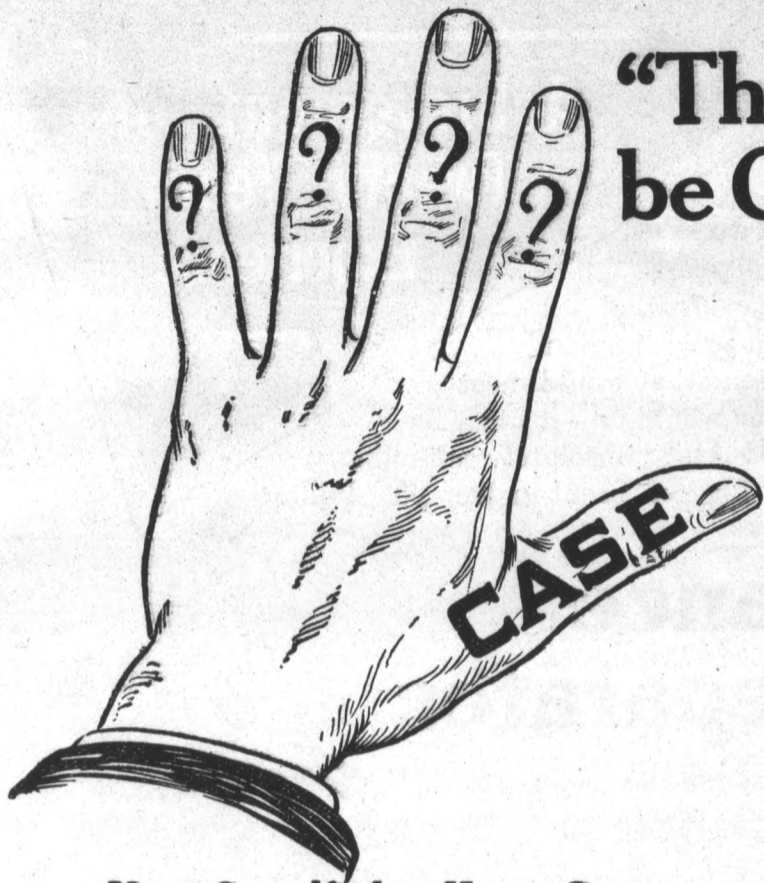
B-V-T-Silo



"The Gibraltar of Silos" will withstand the storms and destroying influences of ages. Built of vitrified Brazil fire clay tile, impervious to air and moisture. Reinforced with steel. The strongest and most permanent silo in the world. Absolutely air-tight and 100% efficient. Never needs painting, repairing or rebuilding. Write today for illustrated Silo Book D. Brazil Hollow Brick & Tile Co., Brazil, Ind.

When writing to advertiser please mention The Michigan Farmer.

NOTE: Even after its experience of nearly a century, Case is not content to publish advertisements unless based on the very latest authoritative information. This is one of a series of messages to farmers prepared after visiting tractor demonstrations, talking to hundreds of farmers and carrying on a national investigation through our sales organization and by mail to find the gas tractor needs of the farmers.



"The Good Tractors Can be Counted on One Hand"

So says a well-known agricultural authority in *The Country Gentleman*. (There are 152 tractors on the market.) Then he goes on to say: "Emphatically, the light tractor has been made practical, but not all the light tractors on the market are practical. There is special danger in the tractor made by a concern that lacks experience in either this or the farm implement field."

The makers of Case tractors believe in spreading such sound advice as this. We think it is the kind of information being sought by knowing farmers. It is keeping our faith with thousands of customers.

Farmers want to know who leads in the tractor world. Many make comparison with automobile history. Many realize the large number of automobile companies who have fallen by the wayside. Most farmers do not want to be caught with an orphan tractor on their hands. This is why so many lean towards Case.

Quality Comes First with Most Farmers

Over 9,000 dealers tell us farmers are commencing to rebel at mere cheapness. "Quality is the most important thing for the farmer to consider," says *The Farmers' Mail and Breeze*. "This is especially true with the smaller tractors, for the greatly increasing interest in the smaller engines has encouraged many companies to produce engines that are not up to the quality of the big machines. It is extremely important to consider the reputation behind the tractor. Is the company of which you are buying the machine well established? Has it been successful in making tractors?"

"In other words, care should be taken to guard against tractors built on half-baked ideas. When you buy a tractor from the standard companies you are certain of getting an engine that has received thought and study by specialists who know the problem of farm engineers."

Your Grandfather Knew Case

When you come to reason it out, it is natural that a concern like the Case Company, founded in 1842, should take first rank. For back of each Case tractor lies tradition, history and valued reputation—worth millions. Each tractor is made to add to this world-wide reputation. We built our first tractor 24 years ago and have since spent hundreds of thousands in perfecting it. We do all the experimenting before placing our tractors on the market. We could not afford to put forth an experimental machine.



From an actual photograph of a Case 10-20

How You Benefit

The very foundation of our continued success depends on good tractors. The honor of the Case name has been built on the reliability of Case products—and accepted the world over as the standard by which others are judged. We are determined to stand by the faith that has given us this name. We may appear selfish in doing so. But if making wholly-worth products is essential to our preservation, if it is necessary to thus jealously guard our reputation—you benefit, too. You profit in our selfishness.

Ten Construction Details in the Case 10-20

1. Larger shafts—all high carbon steel, heat treated. Also larger bearings.
2. Steel channel frame specially braced and stayed to prevent deflection.
3. Ample cooling for motor by same type radiator as used on heavy-duty trucks.
4. Transmission gearing completely housed; runs in an oil bath.
5. Bull pinion of steel, case hardened.
6. Next to bull pinion is a high-duty Hyatt Roller Bearing.
7. Rear axle carried in cannon bearing provided with 3 Hyatt Roller Bearings, 1 of them being on each side of drive wheel.
8. Extra bearings provided and located next to the belt pulley and clutch, which takes the strain due to pull of belt away from engine bearing.
9. Only one clutch is used for both operating in the belt or for traction.
10. Hitch is so arranged as to do away with all side draft.

Each Case tractor in its class has its own special features.



The Sign of Mechanical Excellence the World Over



From an actual photograph of a Case 10-20

Case Commands International Admiration

Case has always stood for quality. For 74 years men and their children and their children's children have placed their confidence in Case—an unviolated trust. Its reputation for honesty is indeed enviable. It is a standard company, making standard products, nothing freaky or experimental. It has an unmatched corps of tractor engineers and experts, backed by unlimited resources in factory and field laboratories. So evidently it is the one concern which is destined to lead the tractor world. Case gas tractors come in four sizes: 10-20, 12-25, 20-40 and 30-60.

Leaders in Other Lines of Agricultural Machinery

Case steam engines, Case threshing machines, Case road machinery, Case automobiles, and each Case product is a dominant factor in its own field. Write today for our complete Case Catalog. It is an album of information that should be under the reading lamp in every farm sitting room. It is beautifully printed, with many interesting scenes and reproductions in color. No farmer should miss having it. Especially when it costs you only one penny for a postal card to get it. Merely write, "Send me your general machinery catalog."



J. I. CASE THRESHING MACHINE COMPANY, Inc. 712 Erie St. RACINE, WIS.

Founded 1842

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

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

EVERYONE familiar with the history of the American revolution knows of the military activity in the beautiful Mohawk valley. Here British agents incited the Indians to commit all sorts of depredations against the settlers. Their frequent incursions finally forced the settlers to forsake their farms and the valley became deserted except for small marauding bands who wandered about seeking for some luckless traveler.

At the time of this story one of the important outposts of the colonists was Fort Stanwix the route to which lay through Mohawk valley. The post was a veritable thorn in the side of the British and, although they did not seem able to raise a force sufficient to

A Messenger From Ft. Stanwix

By EUGENE E. EWING

capture the place, their roving bands did many things to make the life at the garrison unpleasant. They kept constant watch along the trail for messengers traveling between the post and the outside world and anyone falling into their hands was almost certain to lose his life.

The life of the garrison was certainly not to be envied. The tactics employed by the enemy rendered the securing of supplies from the outer world uncertain and the same cause made it difficult to hunt game in the surround-

ing forests, which would have helped out on the rations greatly. There was a time when the soldiers found themselves in a desperate situation. The supplies arranged for had failed to come and an epidemic rendered so many of the men unfit for duty that it was not possible to send a large force for the food and munitions. After considering the matter thoroughly the officers decided that their only hope lay in dispatching a messenger, trusting to Providence that he would be able to make his way safely through the

many dangers. When volunteers were asked practically every man who was at all fit, physically, stepped forward.

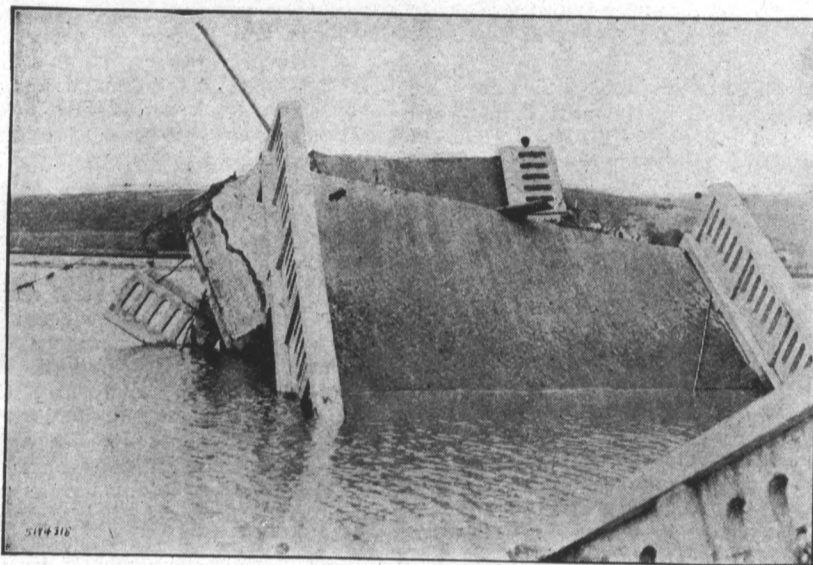
One by one the volunteers were eliminated for one cause or another until there remained but one—Reuben Hart—a lithe, clean-limbed youth but eighteen years of age. It was certainly an important mission to entrust to a mere lad but his superiors had already learned that his courage and endurance were to be relied upon and if anyone could make his way through the dangers that beset the forest trail it was Reuben Hart.

At midnight following his selection Reuben quietly slipped forth from the stockade and disappeared into the shadows of the nearby forest. When

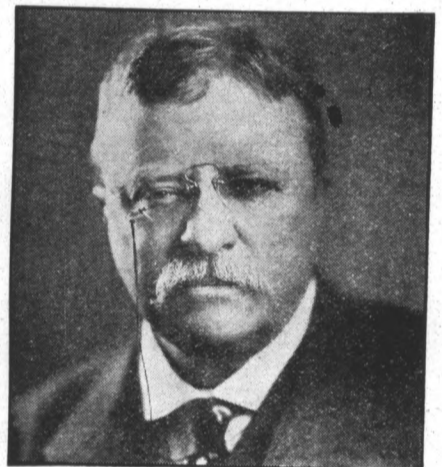
WORLD EVENTS IN PICTURES



Indian Princess Seeks Aid for her People.



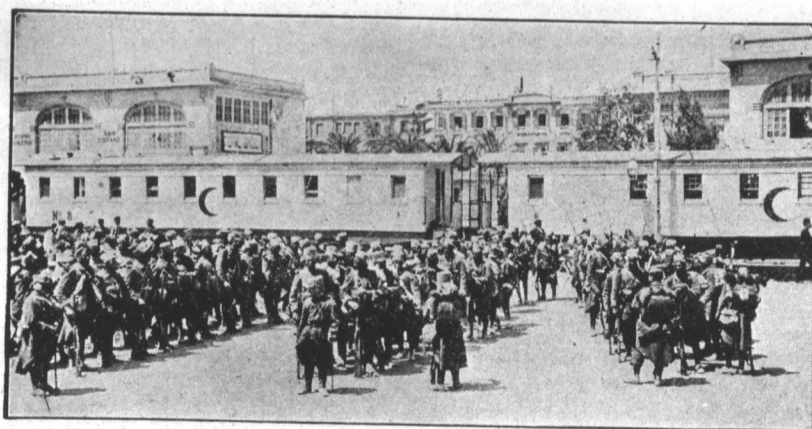
During the Recent Great Floods in San Diego Valley many Fine Bridges were Completely Swept Away.



Colonel Roosevelt Leaves for the West Indies.



Charming Dress of Lace and Georgette Crepe.



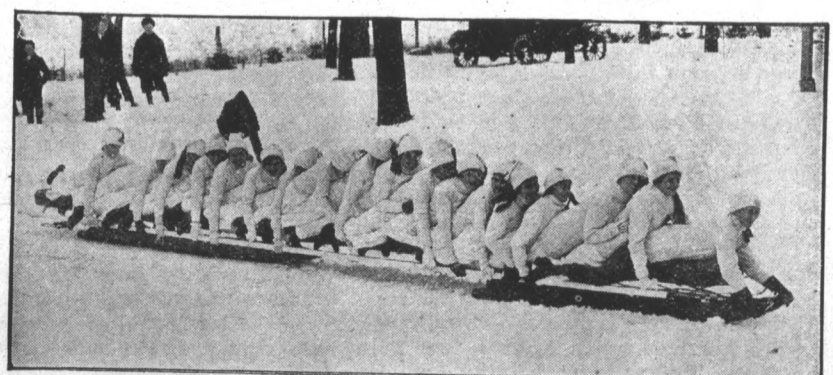
Great Britain is Concentrating Men and Supplies in Egypt to Blockade Germany's Next Drive.



Taffeta Suit for Spring and Summer Wear.



The Fifth Norfolk Regiment whose Members have been Lost Sight of Since Making a Charge in Gallipoli Forest.



Winning Crew of Pretty Girls in Competition with a Dozen Crews of Men at Bobsled Races in the Rural Districts.

the sun arose that morning he had safely covered many miles of his route. But daylight increased rather than diminished his dangers for at any moment some Indian was likely to come across his trail and Reuben well knew that this would mean pursuit. He felt confident that the enemy could not be far away for he had come across camp sites that had been recently occupied. Indeed, he once fancied that he could distinguish the forms of Indians moving along the top of a hill across the valley.

But the first day passed without any excitement and as night was drawing near Reuben cast about for a suitable place to spend the night. Mounting a small elevation to view the surrounding territory he stepped from behind a clump of bushes and found himself facing a camp of half a dozen British soldiers and ten or twelve Indians. They appeared to be busily engaged in preparing their evening meal and the lad quickly stepped back among the trees, hoping that they had not seen him. He was not to be so fortunate, however, for by their shouts he knew that he had been spied and his only hope for safety was in flight. Sparse undergrowth made running easy but the Indians were probably fresh and Reuben fully realized that a great effort would be necessary to outdistance the pursuers.

For a time Reuben seemed to be able to hold his own against all but one of the savages, who was slowly drawing away from his companions. As the Indian continued to shorten the distance between them the lad realized that he must resort to strategy or the race would soon end.

Luckily for Reuben the Indians had started in such haste that they were unarmed and the Britishers were so far outdistanced that he had no fear of their guns. The first of the pursuers was now almost upon him which made immediate action necessary. Turning quickly and swinging his gun Reuben gave the savage such a hard blow that he fell to the ground, stunned. While this put one of his pursuers out of the running the others had been able to make gains and his plight was even more uncomfortable than before.

Reuben realized that unless he was able in some way to regain his breath he must soon drop from exhaustion so, facing about, he raised his rifle to his shoulder as if to fire. The Indians quickly sprang behind trees in quest of safety. While this gave him a slight opportunity for resting it did the same for his pursuers and when, after a few moments the race was resumed he found himself not only unable to make any gain but even to hold his lead upon the savages.

Night was now falling and it had grown quite dark among the trees so that both Reuben and the Indians were compelled to slacken their pace. More than once the lad stumbled and fell but his agility made it possible for him to regain his feet without loss of time. By the noise that the savages were making he knew that they were meeting with difficulties, also. He knew that the darkness offered his only opportunity for safety but to elude his pursuers was not so easy as might be imagined for the ground was covered with sticks and twigs which snapped beneath his feet, making it possible for them to follow him by the sound.

By the noise of their running Reuben could tell that the Indians had now changed their tactics for they had formed into an extended line, probably expecting to encircle him. Their plan seemed likely to succeed when his feet struck a plot of ground that was moist and free from litter. Noting that his footsteps were making no sound by which they could follow him the lad grasped a low-hanging limb and swung himself up into a tree. After a few seconds the Indians went trotting by and as soon as they were a few rods away he dropped to the ground and

quietly made his way in the other direction.

The Indians soon found, however, that they had been tricked and they retraced their course, carefully searching among the brush and fallen trees. Running quite a distance Reuben then climbed into another tree and remained there for several hours while the Indians beat up and down through the woods several times, once even passing beneath the tree where he was hidden. Judging by their talk he imagined that they were angry with each other for allowing him to elude them. They finally gave up the search and returned to their camp.

After waiting for some time to sat-

Land O' Nod Stories.

By HOWARD T. KNAPP

The Wedding Trip Completed

ALTHOUGH the plain surrounding the ant hill was already black with winged ants, young princesses and their mates starting out on their wedding journey, ever increasing numbers of excited insects continued to pour from the city gates until it seemed to Billy Be By Bo Bum that the inside of the earth must be one vast ant hill which now was pouring out its entire population. Faster and faster they came, arising from the gates in dense swarms that swirled and eddied about Billy's head like a living cloud, a cloud that buzzed and hummed with the rustle of innumerable wings.

Then Billy saw that the same thing was going on in the next field where another big ant hill reared its crest above the tangle of the grass forest. Farther on there was another ant city, and this, too, was pouring forth its countless thousands of winged males and young queens.

"Did the inhabitants of all these different cities arrange before hand to start their wedding journeys today so they could all go together?" asked Billy Be By Bo Bum.

"No, sir, they did not," replied Tinker Teedle Tee. "There is never any communication between the different cities, and the inhabitants of one colony never have anything to do with their neighbors, except when they go to war with each other."

"Then how does it happen that they are all starting on their wedding journey at the same time?" demanded Billy.

"How do you know when it is time to spin tops or that kite flying time has arrived?" retorted the elf. "Does anyone tell you when marble season opens?"

"Of course not," replied Billy.

"Well, one boy will start spinning his top and that reminds the others. So each fellow gets out his top and the next day everyone is spinning tops."

"It is the same with the ants," replied Tinker. "The inhabitants of one city will start on the marriage flight and their neighbors, seeing what is going on, catch the excitement and make up their minds it is time for them to do the same thing. The result is that when one flight starts, several others generally join it and start off in one big swarm."

A stiff breeze was now blowing, and as the ants arose from the various hills they drifted with the wind until they were united in one vast swarm that darkened the sky like thunder clouds.

Flying before the wind, the ants drifted farther and farther from their home cities, until at last Billy and Tinker found themselves alone on the plain except for the worker ants, who now seemed to have forgotten their royal brothers and sisters and had turned their attention to closing up the openings made in the sides of the hill to help along the exit.

"By night every one of these young queens will have come to earth,

and after pulling off her wings with her feet, started the work of building a home city of her own," said Tinker Teedle Tee as the swarm disappeared in a clump of trees. "But I can't help feeling sorry for their poor mates, for by this time tomorrow or the day after at the very latest, not a male will be left alive. Their one mission in life is to marry the young queens, and when they have fulfilled their mission, old Mother Nature has no further use for them. One by one they will drop out of the swarm and fall to the ground where they will fall easy victims to the birds and insects that prey on ants. Even if they escape this fate, they will perish of cold and hunger, for they do not know how to forage for themselves but have always depended on others to feed them."

"That certainly does seem a shame," said Billy Be By Bo Bum. "So many thousands of ants born only to die after one short day of liberty."

"Yes, it does seem too bad," agreed Tinker Teedle Tee. "But you must remember, Billy Boy, that after they have married the princesses they are of no further use in the world. If they lived, the worker ants would have to support them, and what with caring for the thousands of baby ants and providing food for the unmarried males and females, it would be too great a task for even the industrious little workers. Then it wouldn't be any time at all before the city became so overcrowded that there wouldn't be room enough to turn around. So, on the whole, Mother Nature has taken the wisest course, as she always does, in dooming the males to death as soon as they have fulfilled their life mission."

"Oh, look, Tinker, what are those ants doing?" cried Billy, pointing to a group of workers who were dragging a princess, who had already pulled off her wings, back toward the city gate.

"They are taking her back to help the Queen Mother," replied the elf. "You see, Billy Boy, the regular Queen is getting old and is not able to lay enough eggs to keep the city supplied with workers. So her children, who are always thinking of the future welfare of their city, adopt one of their married sisters and bring her back home where she is installed as an auxiliary queen and helps her mother lay eggs."

"How does the old queen like that arrangement?" asked Billy. "I should think she would object to dividing the honor with another, even one of her own children."

"Oh, they get along fine together," replied the elf. "In fact, the mother is glad of the help, for then she doesn't have to work so hard. Now, with bees it is different, for the Bee Queen is the most jealous person alive. If the workers dared bring a young queen into the hive, the Royal Mother would fly into a rage and attack the intruder and sting her to death."

"By night every one of these young queens will have come to earth,

Junior Club Work

THE boys and girls who succeed in life are those who plan ahead. Following are a few suggestions for wide-awake club members:

1. First of all have your club organized and leader selected.
2. Send in your enrollment to the Agricultural College, East Lansing.
3. Begin studying the project you are going to take up.

Corn Club Boys should:

1. Test their seed corn.
2. Decide on location of their plot.
3. Study corn culture.
4. Study fertilizers.

Potato Club Boys should:

1. Secure bulletin No. 2.
2. Be familiar with treatment for scab.
3. Decide on variety they are to grow.
4. Decide on location of their plot.
5. Study fertilizers.

Garden Club Boys and Girls should:

1. Decide what vegetables are to be grown.
2. Study local market.
3. Study soils and fertilizers.
4. Make plans for saving wastes by canning.

Pig Club Boys should:

1. Arrange for securing a pig.
2. Study types.
3. Study feeds.
4. Plan for housing pig.

Poultry Club Boys and Girls should:

1. Decide on variety they are to raise.
2. Plan for setting hens or incubator.
3. Plan for housing chickens.
4. Study egg testing, hatching, brooding and feeding.

Garment-making Girls should:

1. Decide on garments to be made this year.
2. Study cloth and materials.
3. Study report blanks.
4. Begin learning stitches.

Housekeeping Club Girls should:

1. Decide on problems to be worked this year.
2. Study of foods and food values.
3. Begin keeping a note-book.

Canning Club Girls should:

1. Study bulletins on cold-pack process.
2. Make a list of products to be canned during the season.
3. Make plans for selling canned goods.
4. Study jars and containers.

Your club meetings will bring out other phases of the work to be studied.

EPH'M JONES.

BY MAGGIE A. CROMLICH.

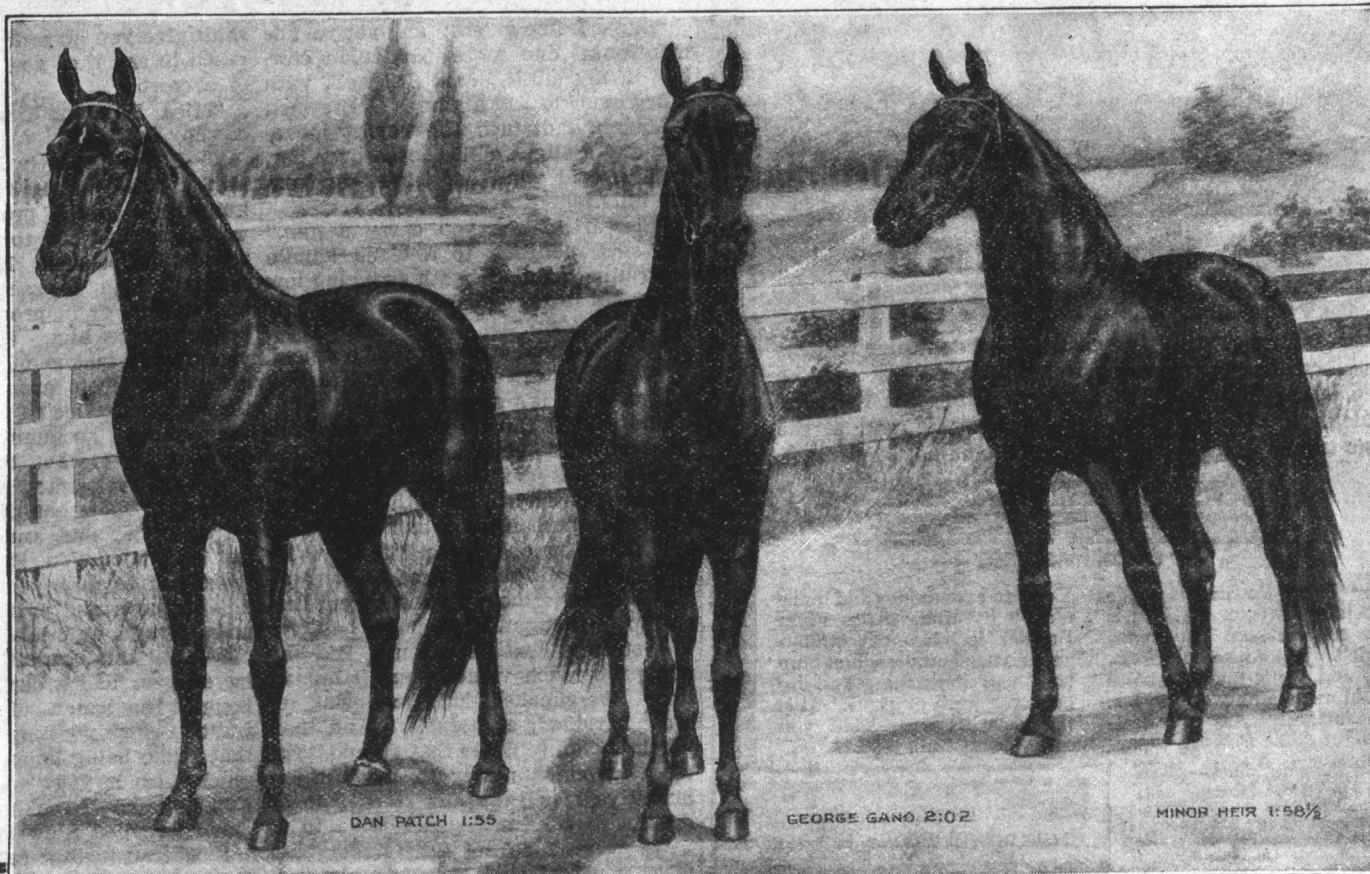
Dah goes lazy Eph'm Jones—
Good-fo-nuffin' bag o' bones!
Got his bait in dat ole can.
Got his fish pole in his han'.
Huh! Des look at Eph'm's hat.
Ever see de beat o' dat?
Dat's de on'y one he owns—
Lazy, loafin' Eph'm Jones.
Why'nt he wuk lak folks lak me?

Why'nt he let dem fishes be?
Whut he s'pose he comin' to?
Ain't he nuffin' else to do?
Look at him, des slouchin' long.
Hummin' some ole sort o' song.
Lawd! I'se got ter dig an' scratch
In dis blame' ole tater patch!

Huh! I reckon he's a gwine
Some're wid dat pole en line—
Way a-past de druck down mill.
Whah de crick runs roun' de hill;
Dat de willer tree is made—
Den he'll set down in de shade.
Good-fo-nuffin' Eph'm Jones!

Lawd! Hit's hot hyuh in de sun!
Wisht dis tater patch 'uz done.
Reckon Eph'm he'll des lay
In de shade dah all dis day.
'Th'owin' in an' pullin' out
Bass en' sunfish—mebbe trout!
Den he'll come a slouc'in' home
Grinnin' lak a curry comb!

Oomph! Dis sun am not! My lan',
Dis is mo' dan I can stan'.
Dah go Eph'm thoo de wood—
Um-m-m! I bet dat shade feel good,
Lawd! I guess nobody owns
Me mo' dan dey do Eph'm Jones.
Tater patch, I sets you' free—
Eph'm! Eph'm! Wait fo' me!



THIS VERY BEAUTIFUL, STALLION PICTURE IN 14 COLORS

**MAILED TO YOU
POSTAGE PREPAID**

FREE

**ENAMELED STOCK
LARGE SIZE 22 by 28**

Here is My NEW, Large, Beautiful Stallion Picture, in 14 Colors that will Strongly Appeal to Every Horse Lover in the World. The Original \$500.00 Painting, was made from Life and is as True as if My World Famous, Champion Stallions, Dan Patch 1:55,—Minor Heir 1:58 1/2,—and George Gano 2:02,—stood Right Before You in Actual life.

This Splendid, 14 COLOR PICTURE is on Extra Heavy, Superfine, Enamel Stock and is Worthy to Hang in Any Home or Office, because it is one of the Finest, and Most Attractive Horse Pictures in the World.

I Mail Them in Extra Heavy, Double X Mailing Tubes so as to INSURE Safe delivery.

Such Splendid, Quality Pictures in Colors and Extra Fine Stock,—usually Retail at \$2.00 to \$3.00 at Art Stores but You can have ONE Absolutely Free.

You will Enjoy this Horse Picture all Your Life and it is entirely Free of Advertising, so that it is REALLY an Art Picture of Great Merit and a Picture of Three Great, World Champion Stallions.

Dan Patch 1:55 is the Fastest Harness Horse of all Champions. Minor Heir and George Gano are the Fastest Team, in the World, with a Wagon Record of 2:02.

Write Me Today and Secure ONE of these Beautiful, 22 by 28 Horse Pictures,—in 14 Colors,—Absolutely Free,—Postage Prepaid.

YOU MUST ANSWER THREE QUESTIONS

All you have to do to receive this Beautiful Horse Picture is to Answer the following THREE QUESTIONS, PROVIDING You Are a Farmer or Stock Owner or Horseman — Over 21 Years of Age.

- FIRST — In what Paper did you read this offer.
- SECOND — How Many Horses, Cattle, Sheep or Hogs do you own?
- THIRD — Have You EVER used International Stock Food Tonic?

Write to — M. W. SAVAGE, Minneapolis, Minn.

You Intended to send for this Large and Beautifully Colored, World Champion Stallion Picture,—the Last Time you Read My Offer,—but you put it off. Why not Write Me Today and Be Sure of Receiving Yours before I withdraw my offer?

**A \$25.00
DAN PATCH
GOLD
STOP WATCH
FREE**

Patch Gold Stop Watch and you may also have one, WITHOUT PAYING ME ONE CENT. It is a,—TWO IN ONE,—Gold WATCH,—Regular Movement which keeps the most Dependable

ASK DEALERS ABOUT MY 599 FREE PREMIUMS.

INDISPUTABLE FACTS FROM THE PRACTICAL SCHOOL OF EVERYDAY EXPERIENCE OF OVER TWO MILLION FARMERS.

The Fact that International Stock Food Tonic,—3 FEEDS for ONE CENT,—has Successfully stood the Practical, Every-Day Test of Farmers and Stockmen All Over the World for Over a Quarter of a Century, is Absolute, Indisputable Proof to any Fair-Minded, Intelligent Man that it Must possess Very Superior Merits. An Increasing Sale for over 26 Years can be explained on no other basis. The Largest Seller in the World can be built up only on merit. Any other claim would be childish nonsense or proof of a vindictive, prejudiced mind. During the past 26 Years, Hundreds of Preparations have been offered for sale—had a limited sale, but have entirely disappeared—but the sale of International Stock Food Tonic has constantly increased during these 26 Years. It is Guaranteed to save 70 Bushels of Oats per year, for Every Work Team, at a using expense of Only \$7.50 per year and also—to keep Horses Healthy and Stronger. It makes Colts grow and develop very rapidly. International Stock Food Tonic,—3 FEEDS for ONE CENT,—was Originated by one of the Largest Harness Horse Breeders of the World (M. W. Savage) owning the 700 acre International 1:55 Horse Breeding Farm with about 250 Stallions, Brood Mares and Colts. He carefully experimented on both his Horses and Other Stock for many years before placing it on the market. It is Guaranteed to make Your Cows give from Two to Four MORE Quarts of Milk, Every Day, and to Make Calves Quick Growers, even on skim milk. It is a common sense, every-day Tonic, Blood Purifier, general System Strengthenener and a Great Aid to Better Digestion and Assimilation, so that Horses, Cattle, Sheep and Hogs will gain More Pounds for Every Bushel of grain eaten. It has also Always had the Largest Sale in the World for Preventing Disease in Hogs and for helping make Pigs, Shoats or Hogs Grow Amazingly. It is not to take the place of grain, but is to mix With grain for Better Health, Larger Profit, by improving Digestion and Assimilation of All Animals. International Stock Food Tonic,—3 FEEDS for ONE CENT,—helps keep Every Animal up to Full Normal Strength and Health, and is a REMARKABLE PREVENTIVE of Disease. You eat several kinds of medicinal ingredients With Your Own Food Every Day. Don't you think it is Just As Sensible to think Your Animals should have certain Vegetable Medicinal Ingredients, which they eat freely when running wild? DEALERS, everywhere, sell it on a Spot Cash Guarantee to Refund Your Money in full if it ever Fails to keep Your Stock in Better Health and to make you a Big Extra Profit over its low cost of,—3 FEEDS for ONE CENT. All Wide-Awake, Fair Minded Farmers admit this is a Square Deal. Over TWO MILLION FARMERS Use it Regularly because it Makes them EXTRA Money in Growing, Fattening or for Preventing Disease. **YOUR CHOICE OF 599 FREE PREMIUMS.**

THOUSANDS OF FARMERS AND STOCKMEN DELIGHTED WITH MY \$25.00, DAN PATCH GOLD STOP WATCH.

When you write me for my Beautiful, Stallion Picture,—ask me about my Easy Plan for quickly securing a \$25.00 Dan Patch Gold Stop Watch,—Absolutely Free. Thousands of Farmers and Stockmen now carry My Splendid \$25.00 Dan Patch Gold Stop Watch and you may also have one, WITHOUT PAYING ME ONE CENT. It is a,—TWO IN ONE,—Gold WATCH,—Regular Movement which keeps the most Dependable

Time and ALSO,—the Stop Watch Movement with which you can time Automobiles, Races and all Speed Events which require the most Exact Timing. Each part works Independently of the other. A more Beautiful Watch and a better time keeper than the \$225. Swiss Stop Watch,—formerly carried by M. W. Savage. Beautiful, High Class,—TWO Gold Watches in One Case.

**M.W.SAVAGE'S
SENSATIONAL
EXTRA FREE PREMIUMS.
EVERY YEAR A LARGE NUMBER OF \$1500. TO \$2500.
DAN PATCH COLTS
ABSOLUTELY FREE.**

M. W. Savage has a,—NEW PLAN,—whereby You can secure a Valuable Dan Patch 1:55,—Colt,—without paying him a cent of money. If you are interested in securing a Dan Patch Colt,—Free,—then be sure and Ask about this,—when you Write for the Beautiful Stallion Picture. You might Secure a colt that would develop into a World Champion,—Worth from \$50,000 to \$100,000. M. W. Savage's Stallion, Arion 2:07 1/2,—sold for \$125,000 Cash,—when only two years old. M. W. Savage Raises a Large Number of Dan Patch 1:55 Colts,—every year,—from High Class Brood Mares. No man can tell which will develop into a \$5,000, or a \$10,000, or a \$25,000, or a \$50,000, or even a \$100,000 Horse. The one You Secure might be the Best of all and be a World Champion and be Worth from \$50,000 to \$100,000. Dan sires both Trotters and Pacers and has 104 in the 1915 Official Speed List. **A Great Sire.**

Light of Western Stars

By ZANE GREY

"Sure, I know 'em; an' you're not mentionin' one more particular cowboy in my outfit," said Stillwell, with a dry chuckle and a glance at Stewart.

Madeline divined the covert meaning, and a slight chill passed over her, as if a cold wind had blown in from the hills.

"Stewart, I see you carry a gun," she said, pointing to a black handle protruding from a sheath swinging low along his leather chaps.

"Yes, ma'am."
"Why do you carry it?" she asked.
"Well," he drawled, "it's not a pretty gun—and it's sure heavy."

She caught the inference. The gun was not an ornament. His keen, steady, dark gaze caused her vague alarm. She had to do with a question involving human life; and the value she placed upon human life, and its spiritual significance, were matters as far as the width of the world from this cowboy's thought.

A strange idea flashed up. Did she place too much value upon all human life? She checked that, wondering, almost horrified, at herself. And then her intuition told her that she possessed a stronger power to move these primitive men than any stern rule or order.

"Stewart, I do not fully understand what you hint that Nels and his comrades might do. Please be frank with me. Do you mean Nels would shoot upon little provocation?"

"Miss Hammond, as far as Nels is concerned, shooting is now just a matter of his meeting several of Don Carlos's vaqueros. It's sure wonderful what Nels has stood from them, considering the Mexicans he's already killed."

"Already killed! Stewart, you are not in earnest?" cried Madeline, shocked.

"I reckon I am. Nels has seen hard life along the Arizona border. He likes peace as well as any man, but a few quiet years don't change what the early days made of him. As for Nick Steele and Monty, they're just bad actors, and looking for trouble."

"How about yourself, Stewart? Stillwell's remark was not lost upon me," said Madeline, prompted by curiosity.

Stewart did not reply. He looked at her in respectful silence. In her keen earnestness Madeline saw beneath his cool exterior, and was all the more baffled. Was there an inscrutable mocking light in his eyes, or was it only her imagination? The cowboy's face was as hard as flint.

"Stewart, I have come to love my ranch," said Madeline slowly, "and I care a great deal for my—my cowboys. It would be dreadful if they were to kill anybody, especially if one of them should be killed."

"Miss Hammond, you've changed things considerable out here, but you can't change these men. All that's needed to start them is a little trouble; and his revolution is bound to make rough times along some of the wilder passes across the border. We are in line, that's all, and the boys are getting stirred up."

"Very well, then, I must accept the inevitable. I can see that some of my cowboys cannot be checked much longer; but, Stewart, whatever you have been in the past, you have changed." She smiled at him, and her voice was singularly sweet and rich. "Stillwell has so often referred to you as the last of his kind of cowboy. I have just a faint idea of what a wild life you have led. Perhaps that fits you to be a leader of such rough men. I am no judge of what a leader should do in this crisis. My cowboys are incurring risk in my employ; my property is not safe; perhaps my life even might be endangered. I want to rely upon you, since Stillwell believes, and I, too, cool gray dawn; and after three hours' that you are the man for this place. I

shall give you no orders, but—is it too much to ask that you will be my kind of a cowboy?"

"Miss Hammond, what kind of a cowboy is that?"

"I—I don't exactly know. It is the kind I feel you might be. But I do know that in the problem at hand I want your actions to be governed by reason, not passion. Human life is not for any man to sacrifice, unless in self-defense or in protecting those dependent upon him. What Stillwell and you hinted makes me afraid of Nels and Nick Steele and Monty. Cannot they be controlled? I want to feel that they will not go gunning for Don Carlos's men. I want to avoid all violence, and yet, when my guests come, I want to feel that they will be safe from danger and annoyance. May I not rely upon you, Stewart? Can't I trust you to manage these obstreperous cowboys and protect my property and Alfred's and take care of us—of me—until this revolution is ended? I have never had a day's worry since I bought the ranch. It is not that I want to shirk my responsibilities; it is that I like being happy. May I put so much faith in you?"

"I hope so—I reckon so, Miss Hammond," replied Stewart.

It was an instant response, but none the less fraught with consciousness of responsibility. He waited a moment, and then, as neither Stillwell nor Madeline offered further speech, he bowed and turned down the path.

"Wal, wal!" exclaimed Stillwell. "That's no little job you give him, Miss Majesty."

"It was a woman's cunning, Stillwell," said Alfred. "My sister used to be a wonder at getting her own way when we were kids. Just a smile or two, a few sweet words—and she had what she wanted."

"Al, what a character to give me!" protested Madeline. "Indeed, I was deeply in earnest with Stewart. I do not understand just why, but I trust him. He seems like iron and steel. Then I was a little frightened at the prospect of trouble with the vaqueros. Both you and Stillwell have taught me to look upon Stewart as invaluable. I thought it best to confess my utter helplessness and to look to him for support."

"Majesty, whatever actuated you, it was a stroke of diplomacy," replied her brother. "The fellow has good stuff in him; but remember, he's a composite of tiger-breed and forked lightning, and don't imagine he has failed you if he gets into a fight."

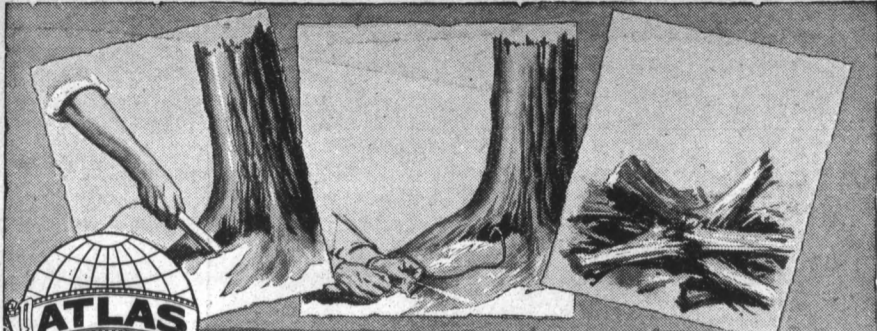
"I'll sure tell you what Gene Stewart will do," said Florence. "Don't I know cowboys? Why, they used to take me up on their horses when I was a baby. Gene Stewart will be the kind of cowboy your sister said he might be, whatever that may be. She may not know and we may not guess, but he knows."

"Wal, Flo, there you hit plumb center," replied the old cattleman. "An' I couldn't be gladder if he was my own son!"

Early the following morning Stewart, with a company of cowboys, departed for Don Carlos's rancho. As the day wore on without any report from him, Stillwell appeared to grow more at ease; and at nightfall he told Madeline that he guessed there was now no reason for concern.

"Wal, though it's sure amazin' strange," he continued. "I've been worryin' some about how we was goin' to fire Don Carlos; but Gene has a way of doin' things."

Next day Stillwell and Alfred decided to ride over to Don Carlos's place, taking Madeline and Florence with them, and to stop at Alfred's ranch on the return trip. They started in the cool gray dawn; and after three hours' riding, as the sun began to get bright,



Get Stumps Out With Less Work

Pulling stumps is slow and costly. "An explosive reduces the labor of clearing land to the minimum. It may be used by any intelligent man," says Minnesota Farmers' Bulletin 134. Get any stump out quickly, and at the same time split it into pieces easily handled, by using

Atlas Farm Powder
THE SAFEST EXPLOSIVE
The Original Farm Powder

Atlas Farm Powder is made especially for farm use. It is easy to use—no experience needed. Just bore a hole, load, fire, and work that otherwise would take hours or days is done instantly! Ask your dealer about Atlas Powder today.

You can save money and make money by using Atlas Farm Powder to blast out stumps and shatter boulders, break up hard-pan, do ditching and dig holes for trees or posts. It is the cheapest farm hand you can possibly find.

Send for "Better Farming" Book—FREE
Our illustrated book, "Better Farming," tells how to improve the fertility of the soil, how to grow bigger crops, redeem waste land, improve orchards, etc., with Atlas Farm Powder. Valuable to every land owner. Mail the coupon.

ATLAS POWDER COMPANY
General Offices: Wilmington, Del.
Sales Offices: Birmingham, Boston, Houghton, Joplin, Kansas City, Knoxville, New Orleans, New York, Philadelphia, St. Louis

FREE BOOK COUPON

ATLAS POWDER CO., Wilmington, Del.
Send me your 74-page book "Better Farming." I am interested in the use of explosives for the purpose before which I mark X. MF2

- | | |
|---|---|
| <input type="checkbox"/> Stump Blasting | <input type="checkbox"/> Tree Planting |
| <input type="checkbox"/> Boulder Blasting | <input type="checkbox"/> Ditch Digging |
| <input type="checkbox"/> Subsoil Blasting | <input type="checkbox"/> Quarrying-Mining |

Name _____
Address _____

The Wheat Yield Tells the Story

of Western Canada's Rapid Progress

The heavy crops in Western Canada have caused new records to be made in the handling of grains by railroads. For while the movement of these heavy shipments has been wonderfully rapid, the resources of the different roads, despite enlarged equipments and increased facilities, have been strained as never before, and previous records have thus been broken in all directions. The largest Canadian wheat shipments through New York ever known are reported for the period up to October 15th,

upwards of four and a quarter million bushels being exported in less than six weeks, and this was but the overflow of shipments to Montreal, through which point shipments were much larger than to New York.

Yields as high as 80 bushels of wheat per acre are reported from all parts of the country; while yields of 45 bushels per acre are common. Thousands of American farmers have taken part in this wonderful production. Land prices are still low and free homestead lands are easily secured in good localities, convenient to churches, schools, markets, railways, etc. There is no war tax on land and no conscription. Write for illustrated pamphlet, reduced railroad rates and other information to

M. V. McINNES,
178 Jefferson Ave. Detroit, Mich.
Canadian Government Agent.

160 ACRE
FARMS IN
WESTERN
CANADA
FREE

FREE! My Big New Farm Gate

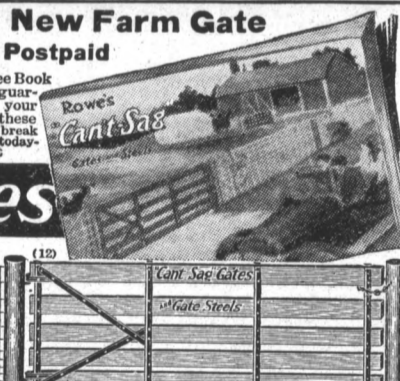
Postpaid
I want every landowner to have my big Free Book of Farm Gates. Tells how to make 5 year guaranteed CAN'T-SAG Gates at home in your spare time and save dollars. Shows why these easy swinging Gates never sag, drag, rot out or break down—yet cost less than any other. Write today. ALVIN V. ROWE, President

"Can't-Sag" Gates

Costs Less than All Wood—Lasts 3 Times as Long
Made with either 4 or 6 inch boards, double-bolted between 8 angle steel uprights—not screwed or nailed. No nails to gather rust or pull out—no wood joints to collect water and rot. Can be furnished with Elevating Attachment

GUARANTEED 5 YEARS—30 DAYS FREE TRIAL
Catalog shows complete Gates ready to hang or just the Gate Steels, hinges, bolts, etc. (everything but the boards.) Postal brings Catalog—free—postpaid. Write. ALVIN V. ROWE, Pres.

ROWE MFG. CO., 2912 Adams St., Galesburg, Ill.



Ditching and Terracing

Made Easy—Bigger crops—better farms with

Martin Farm Ditcher & Road Grader
Cuts ditch to 4 ft. Grades roads. All Steel—Practical—Adjustable—Reversible. Cleans ditches, cuts and works out dirt at same time. Does work of big machines. Soon pays for itself. Write for free booklet and introductory proposition. Owensboro Ditcher & Grader Co. Inc. Box 830, Owensboro, Ky.

400,000 Farmers Have Bought 25,000,000 Rods!

DIRECT FROM FACTORY FREIGHT PREPAID
Every inch Basic Open Hearth wire. Double Galvanized. 13c PER ROD UP.
Money Saving Fence Book and sample free. Just write postal now to THE BROWN FENCE & WIRE CO. Department 49 Cleveland, O.

BROWN FENCE

Send for Catalog
FARM WAGONS
High or low wheels—steel or wood—wide or narrow tires. Wagon parts of all kinds. Wheels to fit any running gear. Catalog illustrated in colors free.

"More Potatoes"

From ground planted secured by use of The KEYSTONE POTATO PLANTER than by any other method of planting. Work perfectly accurate. A simple, strong, durable machine. Write for CATALOG, price, etc. A. J. PLATT, MFR. BOX J STERLING, ILL.



they entered a mesqui grove surrounding corrals and barns, a number of low, squat buildings, and a huge, rambling structure, all built of adobe and mostly crumbling to ruin. Only one green spot relieved the bald red of grounds and walls; and this, evidently, was made by the spring which had given both value and fame to Don Carlos's ranch.

The approach to the house was through a wide courtyard, bare, stony, hard-packed, with hitching-rails and watering-troughs in front of a long porch. Several dusty, tired horses stood with drooping heads and bridles down.

"Wal, dog-gone it, Al! If there ain't Pat Hawe's hoss, I'll eat it," exclaimed Stillwell.

"What's Pat want here, anyhow?" growled Alfred.

No one was in sight, but Madeline heard loud voices coming from the house. Stillwell dismounted at the porch and stalked in at the door. Alfred leaped off his horse and helped Florence and Madeline down. Then, bidding them rest and wait on the porch, he followed Stillwell.

"I hate these Mexican places," said Florence, with a grimace. "They're so mysterious and creepy. Just watch, now! There'll be dark-skinned, beady-eyed, soft-footed greasers slip right up out of the ground. There'll be an ugly face in every door and window and crack."

"It's like a huge barn with its characteristic odor permeated by tobacco-smoke," replied Madeline, sitting down beside Florence. "I don't think very much of this end of my purchase. Florence, isn't that Don Carlos's black horse over there in the corral?"

"It sure is. Then the don's heah yet. I wish we hadn't been in such a hurry to come over. There! That doesn't sound encouraging."

From the corridor came the rattling of spurs, the tramping of boots, and loud voices. Madeline detected Alfred's tone of annoyance.

"We'll rustle back home, then," he said.

"No!"

Madeline recognized Stewart's voice, and she quickly straightened up.

"I won't have them in here," went on Alfred.

"Outdoors or in, they've got to be with us!" replied Stewart sharply.

"Listen, Al," came the boom of Stillwell's big voice; "now that we've butted in over hyar with the girls, you let Stewart run things."

Then a crowd of men tramped pell-mell out upon the porch. Stewart, dark-browed and somber, was in the lead. Nels hung close to him, and Madeline's quick glance saw that Nels had undergone some indescribable change. The grinning, brilliant-eyed Don Carlos came jostling out beside a gaunt, sharp-featured man wearing a silver shield. This no doubt was Pat Hawe. In the background, behind Stillwell and Alfred, stood Nick Steele, towering head and shoulders over a number of vaqueros and cowboys.

"Miss Hammond, I'm sorry you came," said Stewart bluntly, "we're in a muddle here. I've insisted that you and Flo should be kept close to us. I'll explain later. If you can't stop your ears, I beg you to overlook rough talk." With that he turned to the men behind him. "Nick, take Booly, go back to Monty and the boys. Fetch out that stuff—all of it! Rustle now!"

Stillwell and Alfred disengaged themselves from the crowd, to take up positions in front of Madeline and Florence. Pat Hawe leaned against a post and insolently ogled Madeline, and then Florence. Don Carlos pressed forward. Madeline seemed to see him from his great high-top boots upward. It was a slow, fascinated glance she let rise over him.

He wore tight velveteen breeches, with a heavy fold down the outside seam which was ornamented with silver buttons. Round his waist he had a sash and a belt with fringed holster from which protruded a pearl-handled

gun. A vest or waistcoat, richly embroidered, partly concealed a blouse of silk, and wholly revealed a silken scarf round his neck.

His swarthy face showed dark lines, like cords, under the surface. His little eyes were exceedingly prominent and glittering. To Madeline his face seemed to be a bold, handsome mask, through which his eyes piercingly betrayed the nature of the man.

He bowed low, with elaborate and sinuous grace. His smile revealed brilliant teeth and enhanced the brilliance of his eyes. He slowly spread deprecatory hands.

"Senoritas, I beg a thousand pardons," he said. How strange it was for Madeline to hear English spoken with a soft, whiningly sweet accent! "The gracious hospitality of Don Carlos has passed with his house."

Stewart stepped forward. Thrusting Don Carlos aside, he called:

"Make way, there!"

The crowd fell back to the tramp of heavy boots. Cowboys appeared, staggering out of the corridor with long boxes. These they placed side by side upon the floor of the porch.

"Now, Hawe, we'll proceed with our business," said Stewart. "You see these boxes, don't you?"

"I reckon I see a good many things round hyar," replied Hawe meaningly.

"Well, do you intend to open these boxes upon my say-so?"

"No," retorted Hawe. "It's not my place to meddle with property as come by express an' all accounted fer regular."

"You call yourself a sheriff!" exclaimed Stewart scornfully.

"I'll open them. Here, one of you boys, knock the tops of these boxes," ordered Stewart. "No, not you, Monty. You use your eyes. Let Booly handle the axe. Rustle now!"

Monty Price had jumped out of the crowd into the middle of the porch. The manner in which he gave way to Booly and faced the vaqueros was not significant of friendliness or trust.

"Stewart, you're dead wrong to bust open them boxes. That's ag'in' the law," protested Hawe, trying to interfere.

Stewart pushed him back. Then Don Carlos, who had been stunned by the appearance of the boxes, suddenly became active in speech and person. Stewart thrust him back, also. The Mexican's excitement increased. He wildly gesticulated; he exclaimed shrilly in Spanish. When, however, the lids were wrenched open and an inside packing was torn away, he grew rigid and silent.

Madeline raised herself behind Stillwell to see that the boxes were full of rifles and ammunition.

"There, Hawe! What did I tell you?" demanded Stewart. "I came over here to take charge of this ranch. I found these boxes hidden in an unused room. I suspected what they were—contraband goods!"

"Wal, supposin' they are? I don't see any call fer sich an all-fired fuss as you're makin'." Stewart, I calculate you're some stuck on your new job, an' want to make a big show before—"

"Hawe, stop slinging that kind of talk," interrupted Stewart. "You got too free with your mouth once before! Now here—I'm supposed to be consulting an officer of the law. Will you take charge of these contraband goods?"

"Say, you're holdin' on high an' mighty," replied Hawe, in astonishment that was plainly pretended. "What're you drivin' at, hey?"

Stewart muttered an imprecation. He took several swift strides across the porch and held out his hands to Stillwell as if to indicate the hopelessness of intelligent and reasonable arbitration. He looked at Madeline with a glance eloquent of his regret that he could not handle the situation to please her. Then, as he wheeled, he came face to face with Nels, who had slipped forward out of the crowd.

Madeline gathered serious import from the steel-blue flash of eyes where-

Breed Game Birds on Your Farm

FOR many years, we in America have spent much time bemoaning the disappearance of our feathered game. It is indeed a fact that we have little game to eat and little to shoot. But we can have an abundance of game in the fields and on the market.

The farmers of this country have the land and the enterprise to make America the greatest game producing country in the world. They can supply the ever increasing demand of American markets and American sportsmen by game farming.

To you, game farming should prove of interest for three reasons:

It is profitable from a marketing standpoint. The demand for eggs and for breeding stock is much greater than the supply, and will be for years to come. Pheasant eggs, for instance, sell today at from \$20 to \$25 a hundred. Live birds bring from \$5 to \$7 a pair.

It will, at small expense in time and trouble, supply you with an abundance of food for your own consumption. Pheasants, wild turkeys, quail, grouse, and other birds forage much of their own food, and require comparatively little attention.

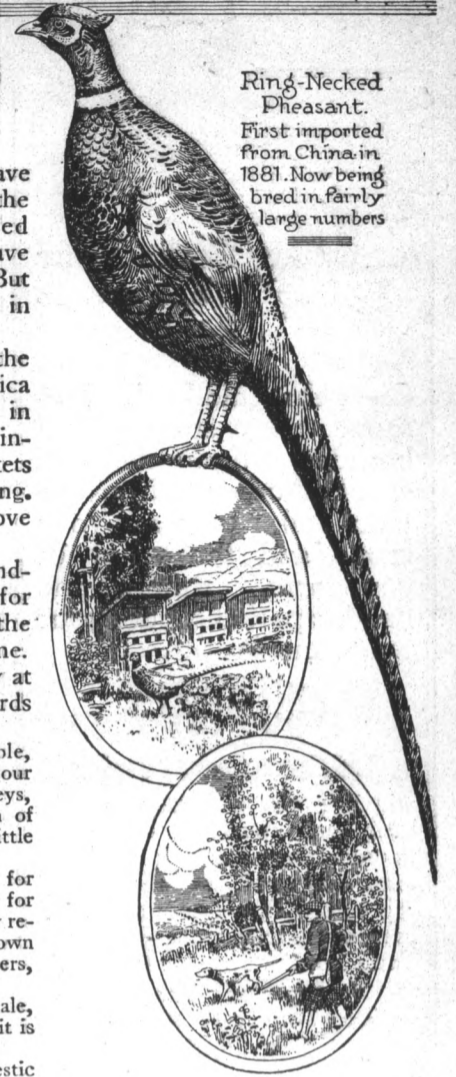
It will provide more shooting for you and for everyone, for it is a fact that game raised for sporting purposes can not be confined in any restricted area. At the same time, those who own large acreage, or who pool their land with others, get profit from those who pay for sport.

Game farming can be done on a small scale, and as a side issue to regular farm work, or it is a profitable occupation in itself.

Women on the farm who are raising domestic poultry, will find it worth while to breed game birds as well.

When conducted on a large scale, a game farm produces sufficient income to be a paying business in itself.

But this subject is too big to be properly treated in this space. Every progressive farmer is sure to be interested in it. Write for the book, "Game Farming for Profit and Pleasure," which will be sent to you without cost. It tells of the subject in a most interesting and informative manner. Fill out the coupon below and a copy will be mailed you at once.



Ring-Necked Pheasant. First imported from China in 1881. Now being bred in fairly large numbers.

Game Breeding Department, Room 205

HERCULES POWDER CO.

Wilmington, Delaware

Manufacturers of Explosives; Infallible and "E. C." Smokeless Shotgun Powders, L. & R. Orange Extra Black Sporting Powder; Dynamite for Farming

Game Breeding Department, Room 205

Hercules Powder Company, Wilmington, Delaware

Gentlemen:—Please send me a copy of Game Farming for Profit and Pleasure. I am interested in game breeding from the standpoint of.....

Very truly yours,

Name.....

Address.....



Come to Detroit

The Automobile Center

And

LEARN THE AUTOMOBILE BUSINESS

Big opportunities everywhere for Detroit trained automobile men. Interesting, pleasant and money making business. Ambitious men needed to start garage and repair shops everywhere. Learn how. Chauffeurs, garage and repair men, testers, etc., have more than they can do. Plenty of room for you.

EARN \$75 TO \$300 A MONTH

Students have experience of building new cars from start to finish—factory training in block testing, etc.—all the leading types of starting, lighting and ignition systems in operation. New 6-cyl. Losier Touring Car and 8-cyl. King Car used for road instruction. Just purchased—new 8-cyl. King test dept. solely for students instruction. Just added 1916 Delco System as used in Buick, Hudson and Packard 12.

DETROIT IS THE PLACE TO LEARN

44 Automobile Factories. They all know and endorse our school. Students can go through them, including Detroit Electric Service Department, without extra charge. Remember, ours is the Old Reliable School, in the heart of the Automobile Industry. Start course anytime. Write for full particulars, guarantee and copy of "Auto School News" and new pictorial catalog—just out—ALL FREE. Or better still, jump on a train and come to Detroit, as hundreds have done. Learn the automobile business in Detroit and learn it right.

MICHIGAN STATE AUTO SCHOOL,

1002 Auto Bldg., 11-19 Selden Ave., DETROIT, MICH.

GOOD SEEDS

GOOD AS CAN BE GROWN
Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

Big Catalog FREE

Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses. R. H. SHUMWAY, Rockford, Ill.

SEED CORN That GROWS

Price's Early Prolific. 100 days—80 to 85 bu. per acre. \$1.50 per bushel shelled. \$2.50 per bushel ear. L. O. B. Paulding, Ohio. THE NORTHERN OHIO LAND CO., PAULDING, OHIO.

PURE FIELD SEED

Oleifer, Timothy, Alsiko, 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.

Member Mich. Experiment Association. Seed Oats, 5, "The Corn Belt Oat," also Worthy's. Not damaged by weevils. Free from smut. Sample and prices on request. E. S. CHRISTIANSEN, CORAL, MICH.

Mention The Michigan Farmer When Writing Advertisers



Make Your Waste Acres Produce

Clear that idle land. Remove the stumps and boulders. Straighten the crooked creeks. Improve your soil. Increase your crops and the value of your farm. Remove the handicaps that hinder your work and profits.



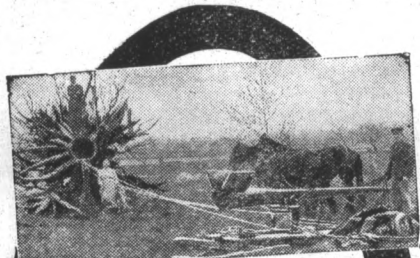
Red Cross Farm Powder

will help you clear land quickly, easily and cheaply. Get those unproductive acres in working order now and crop them early this spring. Thousands of farmers everywhere have found Red Cross Farm Powder a wonderful help.

Big Book Free

contains 188 pages of interesting facts. Explains the use of Red Cross Farm Powder for land clearing, sub-soiling, ditching, tree planting and many other things, and tells how this modern farm help has solved for other farmers the very problems that perhaps now bother you. Write today for

Hand Book of Explosives No. 100F
E. I. Du Pont De Nemours & Co.
Wilmington Delaware



Don't Miss the Big Money

THE virgin soil that the stumps keep out of cultivation in the best soil you have. You can pull out an acre or more of stumps in a day at a cost of from 3c to 5c per stump. No matter how big or tough the stump, it walks right out when the Hercules gets hold of it. With the stump come all the long tap roots that spread out in all directions. The land is left ready for cultivation.

HERCULES Triple Power Stump Puller

Let us send you proof that thousands of farmers have made big money by the Hercules. Get our money saving proposition.

HERCULES MFG. CO.
137 24th Street,
Center-ville, Iowa



Ask About Hand-Power Pullers Low Price 120,000 Pounds Pull

OVERLAND ALUMINUM SHOES

Sizes 7 to 13 Save Money and Prevent Sickness
Heights 6 to 17 in. Water-Proof, Rust-Proof, Rot-Proof, Warm in winter, cool in summer. Weight about the same as an all-leather work shoe. Will outwear several pairs of leather, rubber or wood soled shoes. No metal touches you. Thick felt insole. Comfortable to wear. Keep the feet in good condition. Best by test for all work in any weather. MONEY BACK if shoes do not meet with your approval. Write for FREE catalog which shows styles, gives prices and tells how to order. A postal brings it.

OVERLAND SHOE CO. Dept. 45 Racine, Wis.

by Nels communicated something to Stewart. Whatever that something was it dispelled Stewart's impatience. A slight movement of his hand brought Monty Price forward with a jump. In these sudden jumps of Monty's there was a suggestion of restrained ferocity. Then Nels and Monty lined up behind Stewart. It was a deliberate action and unmistakably formidable, even to Madeline.

Pat Hawe's face took on an ugly look; his eyes had a reddish gleam. Don Carlos added a pale face and extreme nervousness to his former expressions of agitation. The cowboys edged away from the vaqueros and the bronzed, bearded horsemen who were evidently Hawe's assistants.

"I'm driving at this," spoke up Stewart presently, and now he was slow and caustic. "Here's contraband of war! Hawe, do you get that? Arms and ammunition for the rebels across the border! I charge you as an officer to confiscate these goods and to arrest the smuggler, Don Carlos!"

These words of Stewart's precipitated a riot among Don Carlo's followers, and they surged wildly around the sheriff. There were an unflinching of brown, clenching hands and a shrill, jabbering babel of Mexican voices. The crowd around Don Carlos grew louder and denser with the addition of armed vaqueros, barefooted stable-boys, dusty-booted herdsmen, and blanketed Mexicans, the last of whom slipped from doors and windows and round corners.

Shrill cries, evidently from Don Carlos somewhat quieted the commotion. Then Don Carlos could be heard addressing Sheriff Hawe in an exhortation of mingled English and Spanish. He denied, he avowed, he proclaimed, and all in rapid, passionate utterance. He tossed his black hair in vehemence; he waved his fists and stamped the floor; he rolled his glittering eyes; he twisted his thin lips into a hundred different shapes and, like a cornered wolf, showed snarling white teeth.

It seemed to Madeline that Don Carlos denied knowledge of the boxes of contraband goods; then knowledge of their real contents; then knowledge of their destination; and, finally, everything except that they were there in sight, damning witnesses to somebody's complicity in the breaking of neutrality laws. Passionate as had been his denial of all this, it was as nothing compared to his denunciation of Stewart.

"Senor Stewart, he keel my vaquero!" shouted Don Carlos, as, sweating and spent, he concluded his arraignment of the cowboy. "Him you must arrest! Senor Stewart a bad man! He keel my vaquero!"

"Do you hear that?" yelled Hawe. "The don's got you figgered fer thet little job at El Cajon last fall."

The clamor burst into a roar. Hawe began shaking his finger in Stewart's face and hoarsely shouting.

Then a lithe young vaquero, swift as an Indian, glided under Hawe's up-lifted arm. Whatever the action he intended, he was too late for its execution. Stewart lunged out, struck him, and knocked him off the porch. As he fell, a dagger glittered in the sunlight and rolled clinking over the stones.

The man went down hard and did not move. With the same abrupt violence Stewart threw Hawe off the porch, then Don Carlos, who, being less supple, fell heavily. Then the mob backed before Stewart's rush until all were down in the courtyard.

The shuffling of feet ceased, the clanking of spurs, and the shouting. Nels and Monty, now reinforced by Nick Steele, were as shadows of Stewart, so closely did they follow him. Stewart waved them back and stepped down into the yard. He was absolutely fearless, but what struck Madeline so keenly was his magnificent disdain. Manifestly he knew the nature of the men with whom he was dealing. From the look of him it was natural for Madeline to expect them to give way be-

fore him—which they did, even Hawe and his attendants sullenly retreating.

Don Carlos got up to confront Stewart. The prostrate vaquero stirred and moaned, but did not rise.

"You needn't gibber Spanish to me," said Stewart. "You can talk American and you can understand American. If you start a rough-house here, you and your greasers will be cleaned up. You've got to leave this ranch. You can have the stock, the packs, and traps in the second corral. There's grub, too. Saddle up and hit the trail! If you don't, I'll have the United States cavalry here in six hours, and you can gamble they'll get what my cowboys leave of you!"

Don Carlos was either a capital actor or else he was thoroughly cowed by reference to the troops.

"Si, senor! Gracias, senor!" he exclaimed, and then, turning away, he called to his men.

They hurried after him, while the fallen vaquero got to his feet with Stewart's help and staggered across the courtyard. In a moment they were gone, leaving Hawe and his several comrades behind.

Hawe was spitefully ejecting a wad of tobacco from his mouth and swearing in an undertone about "white-livered greasers." He cocked his red eye speculatively at Stewart.

"Wal, I reckon as you're so bent on doin' it up brown that you'll try to fire me off'n the range, too."

"If I ever do, Pat, you'll need to be carried off," replied Stewart. "Just now I'm politely inviting you and your deputy sheriffs to leave."

"We'll go, but we're comin' back one of these days, an' when we do, we'll put you in irons!"

"Hawe, if you've got it in that bad for me, come over here in the corral and let's fight it out."

"I'm an officer, an' I don't fight out-laws an' sich, except when I hey to make arrests."

"Officer! You're a disgrace to the county. If you ever did get irons on me, you'd take me some place out of sight, shoot me, and then swear you killed me in self-defense. It wouldn't be the first time you pulled that trick, Pat Hawe!"

"Ho! ho!" laughed Hawe derisively. Then he started toward the horses. Stewart's long arm shot out and his hand clapped on Hawe's shoulder, spinning him round like a top.

"You're leaving, Pat, but before you leave you'll come out with your play, or you'll crawl," said Stewart. "You've got it in for me, man to man. Speak up now, an' prove you're not the cowardly skunk I've always thought you! I've called your hand."

Pat Hawe's face turned a blackish-purple hue.

"You can jest bet I've got it in fer you," he shouted hoarsely. "You're only a low-down, drunken cow-puncher! You never had a dollar or a decent job till you was mixed up with that Hammond woman"

Stewart's hand flashed out and hit Hawe's face in a ringing slap. The sheriff's head jerked back, his sombrero fell to the ground. As he bent over to reach it, his hand shook, his arm shook, his whole body shook. Monty Price jumped straight forward and crouched down with a strange, wild utterance. Stewart seemed all at once rigid, bending a little.

"Say 'Miss Hammond,' if there's occasion to use her name," said Stewart, in a voice that seemed coolly pleasant, yet had a deadly under note.

Hawe did a moment's battle with strangling fury, which he conquered in some measure.

"I said you was a low-down, drunken cow-puncher, a tough, an' as near a desperado as we ever hed on the border," went on Hawe deliberately. His speech appeared to be addressed to Stewart, although his flame-pointed eyes wire riveted upon Monty Price. "I know you plugged that vaquero last fall an', when I git my proof, I'm comin' after you!"

Two Watches in One



No longer do you need two different watches—one strong, to stand hard daily usage; the other of Handsome Appearance for Sunday and "dress-up" occasions. For here is a watch combining sturdy construction with Beauty, and at a reasonable price.

South Bend Watches

No. 217 is cased in 20 year gold-filled, dust-proof case. It is an accurate time-keeper, that can be depended upon. Plain, easy-to-read figures on dial, dignified and beautiful. \$25 and up, according to kind of case.

Ask your jeweler to show you No. 217 when you're next in town. The Purple Ribbon on South Bend Watches, as shown above, helps you know them instantly. Send for 68 page watch book describing the complete line of South Bend Watches.

South Bend Watch Co.
Owned by the Studebakers
232 Studebaker St.
South Bend Indiana

FROZEN IN ICE
KEEPS PERFECT TIME



Columbia Batteries

The Cell that Rings the Bell

To ring the help to dinner—to call someone to the phone—for every kind of signal, use COLUMBIA. They're the cells that ring the bells unfailingly—and run engines, autos, phones, tractors; make lanterns blaze; set off blasts! The world over, "Columbia" is the other name for RELIABILITY.

National Carbon Company
Cleveland, Ohio
Fahnestock spring-clip binding posts, no extra charge. Make connecting cells an easy job.



CORD WOOD SAWS

Made of special saw steel after our own analysis. Every saw given uniform and tough temper to the very points of the teeth. These saws hand set and filed. Arbor hole 1 1/2 in.

Satisfaction Guaranteed

Size	Price	Size	Price	Size	Price
20 in.	\$2.50	24 in.	\$3.50	28 in.	\$4.75
22 in.	\$3.00	26 in.	\$4.00	30 in.	\$5.25

Hardwood Tilting Table Saw Frame. Weight 370 lbs. Thoroughly braced, complete, \$14.90. Send personal check or money order. We make immediate shipment by express or freight.

FARMERS' CEMENT TILE MACHINE CO., St. Johns, Mo.

"That's all right, Hawe. You can call me what you like, and you can come after me when you like," replied Stewart; "but you're going to be in bad with me. You're in bad now with Monty and Nels. Pretty soon you'll queer yourself with all the cowboys and the ranchers, too. If that don't put sense into you, here, listen to this. You knew what these boxes contained. You know Don Carlos has been smuggling arms and ammunition across the border. You know he is hand and glove with the rebels. You've been wearing blinders, and it has been to your interest. Take a hunch from me. That's all. Light out now, and the less we see of your handsome mug, the better we'll like you!"

Muttering, cursing, pallid of face, Hawe climbed astride his horse. His comrades followed suit. Certain it appeared that the sheriff was contending with more than fear and wrath. He must have had an irresistible impulse to fling invective and threat upon Stewart, but he was speechless. Savagely he spurred his horse, and, as it snorted and leaped, he turned in his saddle, shaking his fist.

His comrades led the way with their horses clattering into a canter. They disappeared through the gate.

Later in the day, when Madeline and Florence, accompanied by Alfred and Stillwell, left Don Carlos's ranch, it was none too soon for Madeline. The inside of the Mexican's home was more unprepossessing and uncomfortable than the outside. The halls were dark, the rooms huge, empty, and musty. There was an air of silence and secrecy and mystery about them most fitting to the character that Florence had bestowed upon the place.

Alfred's ranch house, on the other hand, where the party halted to spend the night, was picturesquely located, small, cozy, camplike in its arrangement, and altogether agreeable to Madeline.

The day's long rides and exciting events had wearied her. She rested while Florence and the men got supper.

During the meal Stillwell expressed satisfaction over the good riddance of the vaqueros and, with his usual optimism, trusted he had seen the last of them. Alfred, too, took a decidedly favorable view of the day's proceedings; but Florence appeared unusually quiet and thoughtful. Madeline wondered a little at the cause. She remembered that Stewart had wished to come with them, or to detail a few cowboys to accompany them, but Alfred had laughed at the idea and would have none of it.

After supper Alfred monopolized the conversation by describing what he wanted to do to improve his home before he and Florence were married. Then, at an early hour, they all retired.

Madeline's slumbers were disturbed by a pounding upon the wall, and Florence's crying out, in answer to a call of—

"Get up! Throw some clothes on and come out!"

It was Alfred's voice.

"What's the matter?" asked Florence as she slipped out of bed.

"Alfred, is there anything wrong?" added Madeline, sitting up.

The room was dark as pitch, but a faint glow seemed to mark the position of the window.

"Oh, nothing much," replied Alfred. "Only Don Carlos's ranch is going up in smoke!"

"Fire?" cried Florence sharply.

"You'll think so when you see it. Hurry out! Majesty, old girl, now you won't have to tear down that heap of adobe, as you threatened. I don't believe a wall will stand after that fire."

"Well, I'm glad of it," said Madeline. "A good healthy fire will purify the atmosphere over there and save me expense. Ugh, that haunted rancho got on my nerves. Florence, I do believe you've appropriated part of my

riding habit. Doesn't Alfred have any lights in this house?"

Florence laughingly helped Madeline to dress. Then, hurrying through the dining-room, and stumbling over the chairs, they went out upon the porch. Away to the westward, low down along the horizon, they saw leaping red flames and wind-swept columns of smoke.

Stillwell appeared greatly perturbed. "Al, I'm lookin' fer thet ammunition to blow up," he said. "There was enough of it to blow the roof off the rancho."

"Bill, surely the cowboys would get that stuff out the first thing," replied Alfred anxiously.

"I reckon so; but all the same I'm worryn'. Mebbe there wasn't time. Supposin' that powder went off as the boys was goin' fer it, or carryin' it out! We'll know soon. If the explosion doesn't come quick now, we can figger the boys got the boxes out."

For the next few moments there was the silence of sustained and painful suspense. Florence gripped Madeline's arm. Madeline felt a fullness in her throat and a rapid beating of her heart. Presently she was relieved with the others when Stillwell declared the danger of an explosion need be feared no longer.

"Sure you can gamble on Gene Stewart," he added.

(Continued next week.)

A FEBRUARY RAMBLE.

BY F. J. Y.

February wild? She's not always so. Here's a winter day full of charm I know.

Leave the fireside, Jacko falls in train, Through the gate we go out into the lane.

Loiter at the gate, rub old Brindle's nose;

While she licks my hand other cows crowd close,

Down the lane we go, climb the orchard hill,

Through the sparkling snow and the winter chill.

Linger at the pond all ice covered o'er; Where the sparrows hop round the frozen shore.

Jacko finds the track of a timid hare; Hard to call him off—so I leave him there.

Onward still and up to the pasture lot—

Crystal white expanse, pure without a blot;

Skirt the woodlot's edge where the trees stand bare,

Holding up grey arms to the wintry air.

Stop to rest a bit on a fallen log; Warm from exercise, breath a misty fog.

Watch a snowbird seek for his morning meal—

Perky little chap—nothing daunts his zeal.

Jacko soon returns, hopping on three legs,

Sitting in the snow, folding arms, he begs.

Thinly clad is Jack, but his heart is true—

Plainly says, "I leave not until you do."

Answering his appeal onward then we fare,

Have a jolly race through the frosty air.

Jacko soon revives, does not spirit lack;

Then we face about for the journey back.

Down the westering slope wander at our ease;

Icicles hanging sharp from the apple trees.

Crunching snow beneath, arching blue above,

Peace of God o'er all, telling of His love.

Now the house we spy, barn and garden land,

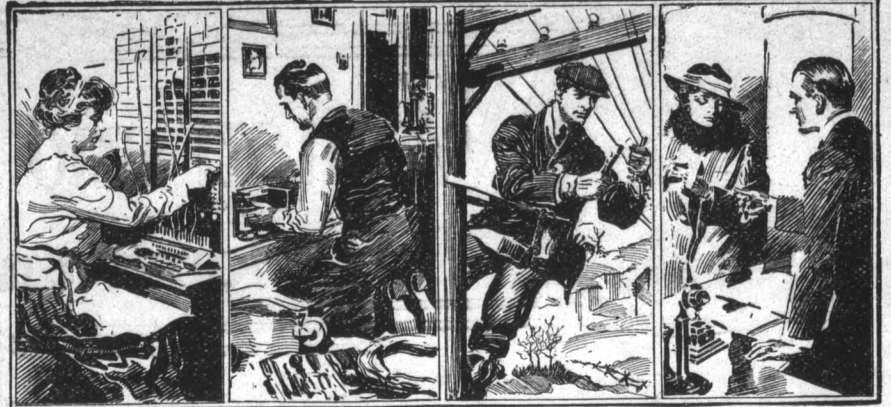
Cupped in hollow like 'twere in God's own hand.

Poor old farm perhaps—not worth much they say;

Yet it shares this bright February day.

Education will not make people happy unless it is directed into useful channels.—Lord.

Talents are absolutely nothing to a man except he have the faculty of work along with them.—Lowell.



The Picked Army of the Telephone

The whole telephone-using public is interested in the army of telephone employees—what kind of people are they, how are they selected and trained, how are they housed and equipped, and are they well paid and loyal.

Ten billion messages a year are handled by the organization of the Bell System, and the task is entrusted to an army of 160,000 loyal men and women.

No one of these messages can be put through by an individual employee. In every case there must be the complete telephone machine or system in working order with every manager, engineer, clerk, operator, lineman and installer co-operating with one another and with the public.

The Bell System has attracted the brightest, most capable people for each branch of work. The training is thorough and the worker

must be specially fitted for his position.

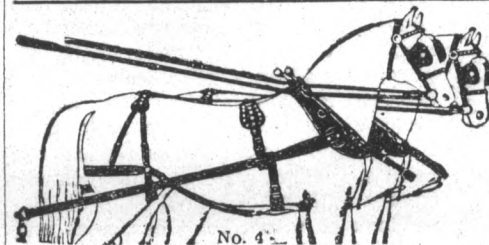
Workrooms are healthful and attractive, every possible mechanical device being provided to promote efficiency, speed and comfort.

Good wages, an opportunity for advancement and prompt recognition of merit are the rule throughout the Bell System.

An ample reserve fund is set aside for pensions, accident and sick benefits and insurance for employees, both men and women. "Few if any industries," reports the Department of Commerce and Labor, "present so much or such widely distributed, intelligent care for the health and welfare of their women workers as is found among the telephone companies."

These are some of the reasons why Bell telephone service is the best in the world.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES
One Policy One System Universal Service



HARNESS HORSE COLLARS

Ask Your dealer for the Label

Made and Warranted by ARMSTRONG & GRAHAM
WHOLESALE ONLY. DETROIT. ESTABLISHED 1880.

VIRGINIA and NORTH CAROLINA Farms Mean Independence

Yes actual independence, if you are willing to do your part. Farms bought at \$15 per acre and up will earn you a comfortable living and under proper cultivation will increase in value 10% or more annually. Delightful climate, sociable neighbors, good schools, churches, good roads, nearby markets. Close to railroad. New York, Philadelphia, Washington, Baltimore 6 to 12 hours. Our magazine, "The Southern Homeseeker," describes in every day language Southern opportunities emphasized by letters from those who have located here. It tells the truth about taxes, labor, low priced lands, climate, crops and living conditions. Write today for years subscription, Official farm list, maps, etc. It's All Free.

F. H. LABAUME, AGRI. & INDSL. AGT., NORFOLK & WESTERN RY. ROOM 402 N. & W. BLDG. ROANOKE, VIRGINIA

If You Want To Have The Best Fur Coat Or Fur Robe

In your vicinity, send that Hide to The Blissfield Robe & Tanning Co., Blissfield, Michigan. Who Guarantee a Square Deal. Have you any Muskrats? We make fine Ladies' Fur Sets, Men's Caps, Gloves, etc. Our new catalogue is just out, finest ever issued devoted to Fur Work. It is free for the asking. Address The Blissfield Robe & Tanning Co., Blissfield, Michigan, Lock Box M. F.

COATS
We custom tan and dress and make up a coat from a large beef hide or horse hide for \$10 complete job. Send for our illustrated catalog today that will give you full information on making up all kinds of fur coats. W. W. WEAVER, Custom Tanner, Reading, Michigan.

Get Your Hide Tanned
Cow and horse hides tanned perfectly and made into handsome coats, robes, mittens, etc. WATER AND MOTH PROOF. FURS DRESSED (all kinds.) HEADS MOUNTED. Booklet and samples free. Sylvania Tanning Co., Dept. 4, Sylvania, Ohio

Mention Michigan Farmer when writing to advertisers



Woman and Her Needs

At Home and Elsewhere



The Domestic Crucible—22 Grace Decides to Be Firm

IT'S bedtime, John Ludlow," Grace announced into the dark of the screened-in porch, where John had been lounging in the hammock since their silent supper. "You'll never get up in the morning if you don't get to sleep right away."

"I think I'll sleep out here," John replied politely. "I want plenty of air, and it's stifling in that bedroom."

Grace opened her lips to remonstrate, then shut them tightly and walked away.

Stifling in that bedroom, and it was 16x18, and the coolest room in the house, cooler even than that porch where vines shut out what breeze might enter! Of course, it was her drapes he was taking a fling at. He wouldn't sleep in their own room because she had just exercised her lawful right to be mistress of the home and had put up overdrapes at the windows when he said he didn't want them. Very well, he could sleep on the porch all summer, and when it got too cold to sleep out he could go to the barn and sleep on the hay, for all of her. Those drapes should stay up, and John Ludlow should see two could be contrary. Though, of course, she wasn't contrary, she simply had to show him she had rights he must respect. Let him sleep on the porch, she didn't care. Not a bit! But a tear trickled down her nose nevertheless and splashed onto the filmy dresser scarf as she meditated.

Just last week she had solemnly vowed they should have no more quarrels! A distinctly audible snuffle warned Grace that if she was to insist on her rights she must stop that train of thought. She blew out the lamp and dropped into bed, telling herself that it was all John's fault and he should be the first to give in. She was to run the house and he the farm, that was their agreement and he could live up to it. But in spite of her positive knowledge that she had the right of it, sleep was a long time coming and there was a large damp spot on her pillow before she finally forgot her troubles in slumber.

Breakfast was a silent meal. Grace got up a half-hour earlier to make the particular sort of corn muffins that John most enjoyed, but he reached by the heaped-up plate at his elbow and took the three-days-old bread. The coffee was unusually good, the eggs just soft enough, the potatoes fried to the delicate shade of golden brown that John always wanted. But somehow the meal went begging so far as John and Grace were concerned. The hired man consumed muffins and coffee with that air of conscious unconcern always adopted by the help when they feel the domestic barometer wobbling, and after what seemed to Grace an eternity, he and John departed for the fields, John flinging back a mumbled "Good-by" as he slammed the screen behind him.

Grace gazed at her peace offering of corn muffins as John stalked down the gravel path. Two big tears rolled slowly down her cheeks and splashed into her cold coffee. But only two! Indeed, she was not going to sit around and cry because her husband chose to be a brute. She jumped up quickly, swept the plate of muffins into a basin

for Carlo, and in her determination to show her independence, poured a pint of cream into Snowball's saucer, though cream was scarce and the butter money had to pay for the screen she insisted on having for the porches.

She hurried through the dishwashing, slighting the cream separator in a way that would have scandalized her mother, decided on bread pudding for dinner, which John loathed, instead of strawberry shortcake and whipped cream, which he would be expecting, and then went to the dining-room to put up her drapes in there.

So far she had only hung them in the living-room and her own room, intending to compromise in that way. But if John chose to get mad and sleep outdoors because she wanted things a little bit her own way, she would just give him something to get mad over. The drapes would go up all over the house.

The morning in the field seemed to have wrought internal changes in

John. When he came up at noon, he positively smiled as he entered the kitchen. Grace's heart smote her at this peace signal. If only she had left down those old drapes and made the shortcake! But it was too late.

Peace overtures faded from John's face as he entered the dining-room, darkened by the soft green drapes. He ate the meal silently, apparently not knowing what he was eating. But when bread pudding followed the mashed potatoes, salmon loaf, canned corn and pickles, all things he detested, Grace saw all hopes of an early arbitration meeting vanish. He was positive she planned that meal out of pure malice. Why hadn't she picked those early peas John told her about the morning before? Why hadn't she cooked the steak the hired man had brought from town last night? Why, oh, why, had she fed Snowball the cream and left the strawberries standing down cellar?

But there was no use wishing. She would just have to stick it out. If she gave in now, she would be tyrannized over all her married life. A dozen wives had told her so, and experienced wives ought to know! DEBORAH.

frost, decay goes on among the products of garden and orchard. It is needful to keep these sorted over to eliminate the waste and insure safe preservation of the remainder. Many a man can remember how, as a boy, he dreaded the task of sorting apples in the cellar, but it has to be done, if the job is rather disagreeable.

The partly decayed fruit is not wholly worthless. An apple with a decayed spot can be trimmed and used to good advantage, especially in a year like the present when apples are scarce. Provident housewives should cook and can every bit of such fruit for spring and summer use. Sweet apples make excellent sweet pickles and are very acceptable on the table. Nobody hears anything about dried apples these days, but as fast as the cans are emptied they can be filled with good rich sauce, thus keeping up the store instead of allowing it to become depleted.

Modern heating methods mean heated basements and these are not conducive to keeping vegetables and fruits. A separate compartment needs to be provided for them in such cases. Potatoes will shrivel badly in a warm room.

The ideal cellar is cemented as to floor, and whitewashed upon the walls. It is also provided with windows to brighten the interior. It is possible to make of it a sanitary cheerful room instead of the dark, unsightly place sometimes found under living-rooms. Stairs leading to the upper rooms are easily kept clean if covered with linoleum. Paint answers equally well, and either is far superior to bare boards, which must be cleaned by scrubbing.

WOMEN FARMERS IN GRAND TRAVERSE.

BY GRACE T. STUTSMAN.

All the world reads with interest the letters which the "Woman Homesteader" has written from the Colorado ranch, "The Woman Rice Planter," publishing the journal of her experiences in Carolina, but of the women fruit growers of our own state little has been said or sung.

It is doubtful if in any territory of similar area can be found so many women owning and directing farms as on the Grand Traverse peninsula, Michigan. This does not include the farmers' wives to whose thrift and good judgment many men owe the success of their farming. Neither does it refer to another large class of women who have turned over to their husbands the management of their inherited or acquired lands. There are many wives whose money has bought land and equipment for the husband to operate. No one knows how many women also furnish the brains for the management of the farm, but since the man is the ostensible manager, these women are excluded from our consideration of women farmers. We refer now to single women, widows, or wives whose husbands are occupied with other pursuits. A census of Peninsula township would show a large number of farms owned and controlled by women. Some are thus engaged by necessity because the husband or father has died leaving the farm to be sold unless the wife or daughter chooses to put her shoulder to the wheel and assume command. In many instances

The Backward Child

By CHAS. W. KOLLOCK.

THE Backward Child may not, at first thought, seem to be a serious problem among the many that confront us today. What is really meant by the Backward Child? It means a child who has begun to attend school, who fails to learn as other children do and at the end of the term is turned back to repeat the course. They are usually regarded as mentally deficient and undoubtedly are physically affected or diseased. This does not seem to impress us as a very serious affair, but let us look more closely into the matter and learn the results. There are in this country twenty millions of school children, ten millions of whom have ear, nose and throat troubles, and five millions suffer from affections of the eyes. There are three hundred thousand blind persons in the United States whom it costs the country fifteen million dollars a year to support. At least 20 per cent of these have lost their eyes from ophthalmia neonatorum which should, had the proper preventive treatment been used or had they been promptly and properly treated after infection, have resulted in a negligible per cent of blindness. There are among the twenty million school children about three million who are called "repeaters," that is, those who remain in one room at school term after term. These "repeaters" cost the country about one million dollars a year extra to try to educate them, and then failure is the more common result. These children are too often supposed to be mentally deficient when, on the contrary, they are physically defective or diseased. In reality only about three per cent are mentally defective, and the money spent in trying to teach them is often wasted as the true cause of the trouble is not detected. It would certainly take but a small portion of the one million dollars that are spent in trying to educate them to use in finding the real causes of their backwardness, when the truly defective could be plac-

ed in the schools for defectives only, and where, in many instances, they are educated and trained to be not only self-supporting but useful citizens.

The medical inspection of schools should begin in selecting the locations for the schools. The buildings should be on high ground where the drainage is good and the surroundings are healthy. They should be away from excessive noises, have plenty of air and sunlight and ample playgrounds. Schoolhouses should be planned by architects who make a specialty of such work and such matters as light, ventilation, heating, plumbing, desks, blackboards, wall, books, bathing facilities, and especially the drinking water should receive most careful attention. The teachers, as well as the children, should be examined to learn if their health is good, if they have chronic affections which may be contagious or infectious and whether, as far as can be ascertained, they are mentally and morally fit to teach. School nurses to aid in inspection may be of great assistance and it would indeed be a real advance to have a competent trained nurse in attendance at every school, not only to look after the many physical ailments of the pupils but to teach them many simple things about injuries, caring for the injured, etc.—Journal of the South Carolina Medical Association.

IN THE CELLAR.

BY ELLA E. ROCKWOOD.

The farm house cellar is a storehouse of food reserves in winter. Modern living has somewhat changed in rural communities as elsewhere and there is less of the wholesale slaughter of meat animals to be stored away in one shape or another for use during cold weather, yet supplies must be cared for and the cellar contains a wholesome assortment of fruits and vegetables and meats. Tightly closed as it is, to prevent the entrance of

they have preferred to retain control of the home place and are finding a fascination in the alternating triumphs and disasters of this most complex phase of agriculture. They are finding, too, a satisfactory life and a comfortable living. The editor of Collier's Weekly said recently: "True success lies not in attainment, but in the sincere and unremitting struggle to attain." In the light of this definition these women are succeeding admirably as are those others, newcomers in the region, who have purchased land, set out new orchards or renovated old ones and are making every effort to build up their farms and to produce the sort of fruit which will increase the good reputation of the region.

They come from varied walks in life and have turned to farming for a variety of reasons. There are school-teachers, artists, musicians, stenographers, unoccupied women of independent means, the childless and hence idle wives of traveling salesmen, as well as the never idle mothers of a small brood whose father is busy in one of the leading professions. Some have come because their friends did. Others have been influenced by the abundant literature of the day dealing with the charms of country life. Still others have come to some of the resorts which abound for a summer's holiday, and finding here a bit of the "delectable land," have chosen to remain and become the possessors of a share of all that this region has to offer of "land and lake and sky," and opportunity.

Because a woman is physically unable to perform all the heavy tasks of farm work is no reason why she cannot wisely direct the operations of field and orchard. To be sure she has the expense of an extra man to attend to the duties which a man farmer would ordinarily do himself, which subtracts substantially from the net income of her farm. But in some cases, if not all, it may be that by woman's natural attention to details and by stopping of small leaks she makes in the long run as much as her brother farmer.

It seems to be the general opinion that a woman cannot cope with the hired man problem, that a man will not work for a woman and carry out her orders to the fulfillment of her plans, but experience in this locality seems to prove that it is a matter of personality and not of sex. The feminine employer seems to succeed here as well as the masculine. Not long ago we read an unconvincing tale of a woman who tried to carry on her father's farm after his death but found that the men did not consider her authority and were constantly criticizing her plans and pointing out flaws in her judgment till in despair she gave up, ostensibly, and later masqueraded in masculine attire, posing as her twin brother, whereupon, the "hands" all fell to work with vim, everything boomed and the year ended in a blaze of glorious success. The moral of this was supposed to be that men won't work for a woman if they know it. While between the lines we spied this point, if she had assumed the same attitude toward her men and used the same tactics with her skirts on, that she did while pretending to be a man, the results would have been as gratifying.

Most of the established women farmers on the Grand Traverse peninsula follow the plan of separate, independent house and garden for their men, and they thus make a point of employing only married men who have the stimulus of family ties to keep them practically permanent and to inspire them with ambition to give satisfaction and to retain their positions. It isn't a mere job, it rises to the dignity of a situation in these cases. Some employers furnish firewood, others a stipulated daily allowance of milk, and most of them allow the hired man the

yield from one or more cows for the winter months during which the owner is away.

This absence of the owner during a part of the year suggests a thought which merits consideration. She is away, either to follow her profession of teaching, painting, singing, nursing or whatever it is on which she depends for income while her farm is developing, or she goes to enjoy the social advantages, or rest or travel which her family wealth enables her to secure. From her earnings, if she is a professional woman, or from her income if she is a woman of means, she has the wherewithal to build up her place more quickly than the widow or daughter on the home farm who must depend on the farm itself to furnish her living, to renew equipment and to maintain its highest degree of fertility. Educators say that anyone can teach the bright pupils, but it takes the best teaching ability to impart knowledge to dull minds, and so we would say that anyone can take money from other sources and build up a farm, but the man or woman who by good judgment and earnest effort can make a farm build itself up, is deserving of the higher praise.

Should one ask if these women are getting rich, the answer would doubtless be that farmers do not "get rich" as wealth is counted now-a-days. If the question is modified to the point of inquiring if they are "making money," it would be safe to say that they are as much as the men, each according to her several ability. Or we would meet it by the Yankee method of replying to one question by asking another, "Do all men farmers succeed financially?" Most certainly not, and neither do all the women. Some do and some do not. Some have undertaken and given up discouraged, others are still striving against great odds while a few have reached independence. At any rate, all have found absorbing interest which precludes physical and mental stagnation. Our argument is that farming is a business at which a woman may succeed as well as a man if she has the requisite qualifications. Of course, the ideal arrangement for farm life is first a farm home made up of the great triangle of husband, wife and children, but since the gods do not vouchsafe these blessings to every maiden, do not refrain from undertaking to run a farm if you feel that you would like to do it, simply because you belong to what used to be called the gentler and weaker portion of human kind. Looking for compensation in all forms of affliction let the lone woman farmer lay this flattering unction to her soul, you couldn't discharge a husband and get another if he didn't do the work as you want it done.

The woman who would own and operate a farm needs the suppleness of a sapling to bend and not break when storm and stress arrive; the firmness of granite with the resilience of rubber, to rebound when borne down by disappointment and the uncounted disasters incident to crop and equipment. She needs courage, sound judgment, foresight, health, and a sense of humor.

HOME QUERIES.

Household Editor:—Can you tell me how I can get spots of red barn paint out of light-colored print? I tried wetting them with kerosene and washed carefully with naphtha soap. It hardly made them fainter. Boiling did no good. Do the tiny black flies do house plants any harm? If so, is there a remedy?—Mrs. F. L. S., Traverse City.

Soaking the paint in gasoline or turpentine should remove it. Water and boiling will only make matters worse. Wash the plants in tobacco water.

Household Editor:—Will you print the names of several firms in Detroit who buy flowers from small producers, such as asters, gladiolus, tulips and dahlias?—A. J. B.

We cannot print the names of business firms in this column.

"Just What You Want"
—tempting, tasty, tender Biscuits, Doughnuts, Cakes and other wholesome things to eat—so good that I could eat 'em all.
"That's because they're made with Calumet Baking Powder. I know Calumet is pure—I know it makes everything uniformly good—I know it never fails—I know it's safest—the most economical to buy and to use."
"Mother uses Calumet every bakesday and you ought to taste the good things we have at our house."
Received Highest Awards
New Cook Book Free
See Slip in Pound Can

© CALUMET BAKING POWDER CO. CHICAGO

Save Money, Room and Fuel

Kalamazoo Pipeless Register Furnace

SET in cellar—connect with big register set in floor of one of main rooms—heats the whole house with forced warm air—easy to set up—no pipes to fit except smoke pipe.

Free Trial—Cash or Easy Payments

Write at once for manufacturer's factory price. We pay freight and ship within 24 hours. If you prefer a pipe furnace we shall be glad to make up plans free and quote prices. Write today and ask for Furnace Catalog No. 909

KALAMAZOO STOVE CO., Manufacturers, KALAMAZOO, MICH.

300,000 families using Kalamazoo Stoves, Ranges, Gas Stoves, Furnaces, White Enamelled Metal Kitchen Cabinets and Tables. 4 catalogs—say which you want.

We Pay Freight

A Kalamazoo Direct to You



Rheumatism, gout or lumbago are soon relieved by

Vaseline Camphorated
Petroleum Jelly

Also strongly recommended as a soothing, healing ointment for gathred breasts.

At drug and general stores everywhere. Illustrated booklet describing all the "Vaseline" Preparations mailed free on request together with "Vaseline" Poster Stamps.

CHESEBROUGH MFG. CO. (Consolidated)
33 State Street New York City

AGENTS \$10 to \$20 a Day
Easy selling, new, just out.
Aluminum Patent
Gem Steam Cooker
Cooks entire meal over one burner. Will not burn or scorch food. Guaranteed 15 years. Thousands will be sold—low price—big profit. Write quick for exclusive territory and large free catalogue of 400 specialties.
American Aluminum Mfg. Co., Div. B.B. Lemont, Ill.

Free for Testing
A pair of mated EVERBEARING STRAWBERRY PLANTS FREE if you will report as to your success with them. Will bear loads of big, red berries from June to November. We have counted 480 berries, blossoms and buds on a single plant. A postal will bring the plants, also enough seed of the new CEREAL PETERITA to plant a rod square of ground. Also a pkt. of perennial ORIENTAL POPPY seed. Send 10 cts for mailing expense or not, as you please. Write today and get acquainted with THE GARDNER NURSERY COMPANY Box 745, Osgo, Iowa.

"STRAWBERRY PLANTS THAT GROW"
"PROGRESSIVE", Best Fall-bearer: Also Std. June sorts, including our New Seedling, "COLLINS". Full Assortment other Fruit Plants. Catalog FREE.
C. E. Whitten's Nurseries, Box (14) Bridgman, Mich.

Strawberry Plants
Guaranteed as good as grows at \$1.00 per 1000 and up. Catalogue FREE.
ALLEN BROTHERS, R. 9, Paw Paw Mich.

Strawberry Plants
And other Small Fruit Plants
E. W. POTTER
Box 368, Leslie, Mich. Catalog Free.

STRAWBERRY AND SMALL FRUIT PLANTS
Reliable Northern Grown Plants, Ornamental Shrubs and Gladiolus. 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 EVERBEARING STRAWBERRY. Write today sure for free catalog.
J. N. ROKELY, BOX 86, BRIDGMAN, MICH.

NEW STRAWBERRIES FREE to all
Reliable, interesting and instructive—All about the New Everbearers and other important varieties. Address C. N. FLANSBURGH & SON, JACKSON, MICH.

WHOLESALE PRICES
on Strawberry Plants. Many other varieties and garden plants at reasonable prices. Catalogue FREE. Write today to A. A. VESTON & COMPANY, BRIDGMAN, MICHIGAN

Strawberry Plants, \$1.65 per 1000. Truthful, valuable illustrated catalog free. Worth \$5. Mayer's Plant Nursery, Merrill, Michigan.

Indoor Closet
More Comfortable Healthful and Convenient than the Out-Door Privy
Eliminates the open vault and cesspool, breeding places for germs. Have a warm, sanitary, odorless toilet right in your house. No going out in cold weather. A boon to invalids. Endorsed by State Boards of Health.

ABSOLUTELY ODORLESS
Put it Anywhere In The House
The germs are killed by a chemical process in water in the container, which you empty once a month. Absolutely no odor. No more trouble to empty than dishwater. Closet absolutely guaranteed. Write for full description and price.
ROWE SANITARY MFG. CO. 318 ROWE BLDG., DETROIT, MICH.
Ask about the Ro-San Washstand—Hot and Cold Running Water Without Plumbing

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.

Wisconsin Wins In Big Hatching Contests Every Year

Why Pay More

For only \$10 you can get these two prize winning machines, delivered, freight paid east of the Rockies. You take no risk—money back if not satisfied. You can order direct from this ad. Ask the publisher about us.



Contests Every Year

Wisconsin Incubators have long proved their wonderful hatching qualities. Competing with every make known, they won in the five big annual National Hatching Contests. Think of it. Five consecutive victories. That certainly proves you can't make a mistake. Shipped on 30 Days' FREE Trial

Both \$10
Machines
Freight Paid For Only

Made of California Redwood

MONEY BACK IF NOT SATISFIED

10-YEAR GUARANTEE

We also furnish 180 Egg Incubator \$12 and 180 Chick Brooder both for only \$12

Wisconsins have hot water heat, double walls, double glass doors, copper tanks and boilers, self-regulating. Nursery under egg tray. Made of finest, select, clear CALIFORNIA REDWOOD, not pine, paper or other flimsy material. Incubator finished in natural color—not painted to cover up cheap, shoddy material. Incubator and Brooder shipped complete with thermometers, egg tester, lamps, everything but the oil. This is the best outfit you can buy. If you don't find it satisfactory after 30 days' trial, send it back. Don't buy until you get our new 1916 catalog, fully describing this prize winning outfit. **WRITE FOR IT TODAY.** You can't make a mistake in buying a Wisconsin. On the market 15 years.

WISCONSIN INCUBATOR COMPANY, Box 106 Racine, Wis.



Stronger Chicks and More of Them

Don't waste a whole season—your time, temper and money. Start right. Your interests and ours are identical. You want better chicks and more of them—we want you to have them. X-Ray book tells how. Send for free copy.



X-Ray Incubator

Duplex Central Heating Plant chases cold out of all the corners. X-Ray Automatic Trip keeps heat regulated exactly. Fill the X-Ray Tank only one time—one gallon—for the entire hatch. Hinged glass panel permits you to see all that's going on in the hatching chamber without raising the top or even stooping. X-Ray perfectly level egg tray leaves all space available for eggs. **Fifteen big special features. Get free book and see for yourself. We pay express to practically all points.**

Brooders Too

Give your chicks a chance. Raise largest percentage. X-Ray Brooders—sanitary, rat-proof, evenly heated by central heating plant. Postal for free book No. 29

X-Ray Incubator Company, Dept. 29, Des Moines, Iowa

106 Chicks Out of 108 Eggs.

HATCHED IN AN OLD TRUSTY ELEVEN YEARS OLD

This was for Mr. S. W. Warren of Tryon, Neb., and it was in an Old Trusty that had fallen off the porch and lay around the yard and given abuse that would have put an ordinary incubator out of business in no time. Old Trusty is built to make good, not only for a few years but for many years, and make big hatches any time and anywhere. 650,000 satisfied owners.

Write for This FREE

and get our 1916 price, freight paid to your station. 40 to 90 days' trial. H. H. JOHNSON.

M. M. JOHNSON CO., Clay Center, Neb.

Old Trusty
Incubator and Brooder
H. H. Johnson

Less \$10 Than
Freight paid anywhere east of Rockies—a trifle more farther west.

Write for Express Prepaid Price

WRITE Your Name on a Postal

and get our 1916 Incubator Book FREE and postpaid. Shows why Prairie State Incubators "hatch most chicks that live." Contains chapter on Poultry Diseases, also one on hatching and rearing. **PRAIRIE STATE INCUBATOR CO.** 123 Main Street, Homer City, Pa.

Ironclad WINS In 2 Biggest HATCHING CONTESTS Ever Held

Mrs. C. F. Merrick, Lockney, Tex., with her 140 egg Ironclad Incubator, or wins in the No. Valley Farmer and Nebr. Farm Journal Big Hatching Contest. She placed 148 eggs in the incubator and hatched 148 strong chicks. Think of that. You can now get these famous winners, made of Calif. Redwood.

140 Egg Incubator } BOTH \$10
Chick Brooder }

If ordered together, 30 days trial, 10-year Guarantee. Freight Paid. Order direct from this advertisement—money back if not satisfied. Factory. 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)

GEM The High Percent Hatcher

Buy the Gem and be sure. 25 years highest success. Capacity 50 to 270 eggs. Gem chicks always lively and thrive because our unique system of ventilation conserves natural egg moisture. Walls six-ply (4 layers of insulation). Built of Cypress, the "wood-elephant." Gem hot-water heating system of cold-rolled copper distributes and equalizes warmth. Best double-wafer regulator. Removable chick trays. Many more features in big, free catalog. Get our special offer, also "How to Buy an Incubator," and save money. Write today.

GEM MFG. CO., Box 20, Greenville, O.

\$1500 Yearly in Backyard Raising Poultry

New 100-page book—just off press—by recognized poultry authority—gives the very information you need. Hundreds of women pay for homes raising poultry in back yard—healthy, interesting experience successful breeders—how they started, grew and made money.

Describes America's greatest money-saving line of guaranteed incubators, brooders. Book in large demand—write immediately.

Model Incubator Co., 15 Henry St., Buffalo, N.Y.
Also 89 Barclay St., New York City

Free Book Tells How

\$2.50 for 25 to 50 CHICK HOVER

Made of Galvanized Steel. Can be used in any box. Safe and durable. Hot water heat. All complete incubator book free. We make 73 different articles.

WENDELL INCUBATOR CO., Holly, Mich.

Constructing the Poultry House

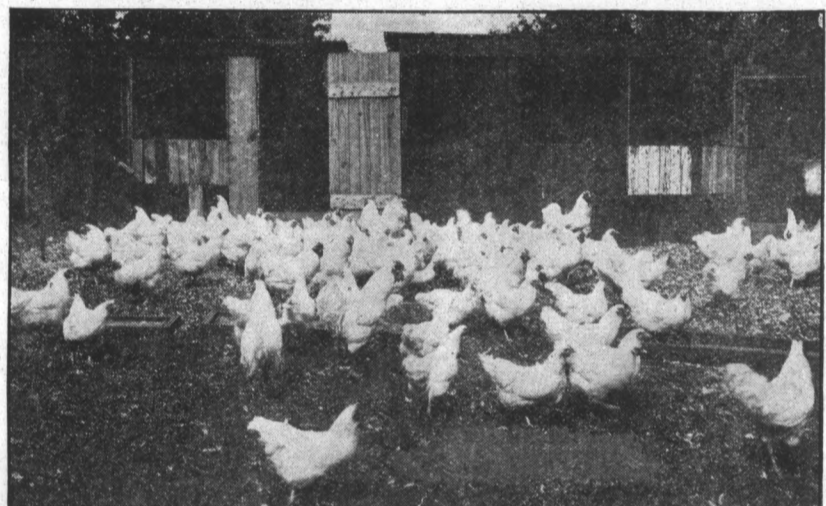
THIS is the time when people think of building new poultry houses or enlarging old ones that the flock has outgrown. In building a new house it is a mighty good scheme to try and overcome some disadvantages that were present in the old structure.

In selecting the site for the poultry house, we need to be very cautious because the site has so much to do with the health of the chickens and with the salability of the eggs. If we were to place the chicken house in a low, damp, dirty place it would mean that we would have diseased fowls from parasites that live in the soil and in addition, we would probably have dirty eggs, because dirty ground means dirty feet for the hen—dirty feet mean dirty nests, and so on until the egg lands in the hands of the consumer. Then we hear peculiarly grating, disagreeable remarks, not to mention the fact that we have to take less money for the eggs than as though the old hen had wiped her feet on the door mat.

The most important things to bear in mind when building a chicken house are dryness, ventilation, sunlight and disinfection. We will take them up in

house, giving rise, as it does, to various and sundry diseases such as roup, catarrh, and so on.

The body temperature of the hen is 160 degrees F., and so we see that she must have considerable air to maintain such rapid oxidization within her body. She requires more air in proportion to her body weight than any other creature upon the farm. King estimates that a horse weighing one thousand pounds breathes a trifle less than thirty-five hundred cubic feet of air daily. A cow of the same weight demands a little less than three thousand cubic feet, but two hundred five-pound hens make a demand upon the ventilation for eight thousand cubic feet of air every twenty-four hours. This shows us immediately that one of the most important essentials of poultry house construction is that we provide ample air for the hens to breathe. There can be little question but that many farm poultry houses are deficient mainly because they do not admit enough fresh air and sunlight. Fresh air is just as essential as is food and sunlight is nature's own disinfectant. The point to be remembered in ventilating the poultry house is to admit liberal supplies of fresh air, but at the



Good Hens can not do their Best in Poor Coops.

the order named. In the previous paragraph we spoke of some of the effects that a dirty yard might have upon the hen and the hen market. That was destructive criticism. Constructive criticism would dictate that we place the hen house upon a southern slope—that means sloping, not level ground. If we can get a location that has a warm porous soil and that is capable of being well drained, we may deem ourselves very fortunate. It is a very good plan to keep the hen house at some little distance from the surrounding buildings so that there will be provided no harboring places for rats, mice, or other vermin. Some people think that the chicken house ought to be pretty close to the dwelling house but I am slightly at variance with this view. That the proximity of the chicken house does have something to do with the ease with which the woman of the house can take care of the chickens I have little doubt, but I sincerely believe that the obnoxious presence of the chickens on the back porch more than outweighs the convenience that is had by their quarters being close to the house. It seems to be the inherent nature of a chicken to want to be around the back porch if his quarters are close enough, and as for me, "give me liberty or give me death"—of the chicken.

The kind of floor that ought to be in a chicken house is a matter that may well merit some attention. It is more or less ideal to have a cement floor because, in this manner, we can keep out vermin that would burrow up from underneath, but it is true that fowls are not as healthy on cement floors as they are upon dirt floors. The cement is apt to be damp and if there is anything that cannot be condoned in poultry house architecture it is a wet

same time to keep this from circulating over the fowls in the form of a draft. A muslin front house adapts itself to this principle very readily. It has, however, an objectionable feature when used in rather damp locations. If the meshes of the muslin are too tight, the moisture collects in them and with it the dirt, thus giving an unsightly appearance. However, the appearance is not the most objectionable feature that such a wet combination possesses. When the meshes become wet the strands swell and clog up most of the pores through which air can enter. In getting muslin for a muslin front house, we ought to get that with large meshes rather than tightly woven fabric.

Sunlight and the mite mean constant fight. Wherever sunlight can get to roosts or poultry house appliances, we may rest assured that the lice will not be very troublesome. Direct sunlight is one of the best disinfectants that can be had and the more that can get into the poultry house the better. There are many more poultry houses that suffer from insufficient light than there are that have too much. A very good rule to go by in putting windows into the hen house is to allow one square foot of glass for every ten to sixteen square feet of floor space, or one square foot of glass to each three birds to be housed. The construction of a hen house ought to be simple, in fact so simple that at any time the house can be thoroughly sprayed with the assurance that the gasoline or kerosene used can get into all the crevices or cracks which present themselves. The nests may well have portable backs and fronts, or be so arranged that the top can be raised up, the straw cleaned out and the nests completely disinfected. Do not forget that

See and Try BEFORE YOU PAY 30 DAYS

This 135-Egg Incubator and Brooder shipped anywhere on 30 days' trial. No money down—no deposit.

\$995 Pays for BOTH if Satisfactory When Tested

No other such open liberal offer as this, because no other outfit equals the UNIO. Incubator hot water; Brooder hot air. Both galvanized iron. Satisfaction guaranteed. We take all their cash price both only \$9.45.

FREE CATALOG Postal Brings It

THE UNITED FACTORIES CO., 431 Cleveland, O.

Tells why chicks die

E. J. Reefer, the poultry expert, 4382 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 98 per cent of every hatch. All poultry raisers should certainly write Mr. Reefer for one of these valuable FREE books.

I Will Tell You How to Make Poultry Healthy

Make Hens Lay Make Chicks Grow

Now that mating time has arrived, it's up to you to see that your poultry get a tonic and internal antiseptics to make them vigorous and free of disease. *Therefore, feed Pan-a-ce-a.*

In that condition your hens will lay better, you will get more healthy, fertile eggs and the chicks will stand a better show of reaching maturity. *Therefore, feed Pan-a-ce-a.*

And, before the hatches come, I want to warn against gapes, leg weakness and indigestion, for these ailments are responsible for half the baby-chick losses. *Therefore, feed Pan-a-ce-a—it will save you these losses.*

My lifetime experience as a veterinarian, a doctor of medicine and poultry raiser has taught me the needs of poultry under all conditions; that is why I urge you to try my scientific and long-tried prescription,

Dr. Hess Poultry PAN-A-CE-A

It's a Tonic—Not a Stimulant

Here are a few of the valuable ingredients in Pan-a-ce-a to meet the requirements of your poultry which I have just stated:

Nux Vomica, a nerve tonic; *Carbonate of Lime*, a shell former; *Hyposulphite of Soda*, an internal antiseptic; *Quassia*, an appetizer; *Iron*, to enrich the blood, and other valuable ingredients, all well known and recommended by the highest medical and veterinary authorities.

Perhaps the strongest argument in favor of Pan-a-ce-a is the fact that it has been on the market for 22 years and is growing in favor each year. Read the guarantee in the right-hand panel—that is your protection.

There is a Dr. Hess dealer in your town, a man whom you know, a man who stands back of my guarantee and will return your money if Pan-a-ce-a fails to make good. 1½ lbs. 25c; 5 lbs. 60c; 25-lb. pail, \$2.50 (except in Canada and the far West).

DR. HESS & CLARK, Ashland, Ohio

Dr. Hess Stock Tonic

25-lb. pail, \$1.60; 100-lb. sack, \$5.00

Why pay the peddler twice my price?

Your stock need this tonic now to harden and condition them after the confined heavy feeding of winter. There's nothing better to put horses in trim for hard spring and summer work. Milch cows need it just now to prepare them for the heavy milking season ahead. Dr. Hess Stock Tonic makes all stock healthy, keeps them toned up and expels worms. Sold under money-back guarantee. 25-lb. pail, \$1.60; 100-lb. sack, \$5.00; smaller packages as low as 50c (except in Canada and the far West and the South). Send 2c for my new free Stock Tonic book.

Dr. Hess Instant Louse Killer

Kills lice on poultry and all farm stock. Dust the hens and sprinkle it in the nests, or, if your fowl are provided with a dust bath, sprinkle Instant Louse Killer in the dust bath every other week—the hens will do the rest. Also destroys bugs on cucumber, squash and melon vines, slugs on rose bushes, etc. Comes in handy, sifting-top cans. 1 lb. 25c; 3 lbs. 60c (except in Canada and the far West). I guarantee it.



Gilbert Hess
M.D., D.V.S.



My Guarantee

So sure am I that Dr. Hess Poultry Pan-a-ce-a will help make your poultry healthy, help make your hens lay and your chicks grow that I have told my dealer in your town to supply you on condition that if Pan-a-ce-a does not do as I claim, return the empty package and get your money back.

FREE

If you have a sick or injured animal, write Dr. Hess, tell symptoms, enclose 2c stamp for reply, and he will send you a prescription and letter of advice free of charge.

Barred Plymouth ROCK COCKERELS, large, farm raised from prize winning flock. \$3 each, two for \$5. J. A. BARNUM, Union City, Mich.

Barred Rock Cockerels—200 big husky vigorous birds a few pullets. W. C. Coffman, R. 3, Benton Harbor, Mich.

Ringlet Barred Rocks The noted prize strain. Grand Breeding Cockerels for sale, \$3 apiece, two for \$5. Also selected pens for breeding. Plainview Stock and Dairy Farm, Romeo, Mich.

BIG Beautiful Hen hatched Barred Plymouth Rocks sold on approval \$2 to \$5 each. (4 females and male \$10) good layers. Circulars and photos. John Northon, Clare, 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.

CLEARVIEW Poultry Farm Established 1900. Trap-nest strain of S. C. W. Leghorns Eggs for hatching \$15, \$1; 50, \$3; 100, \$5. Thos. H. Barns, Creston, Ohio.

CHICKS, S. C. W. Leghorns, each. JOS. NEUMAN, Prop., Eureka Farm, Dorris, Mich.

Barred Plymouth Rocks. Have some splendid cockerels for \$2. Best breeding obtainable not quite matured. Would cost \$5.00 otherwise. RIVERVIEW FARM, R. 2, Vassar, Mich.

Barred Rock Ckls. Choice birds from \$2 up—big bone fellows with deep narrow barring. A. A. Pattullo, Deckerville, Mich.

BARRED Rocks Parks 200 Egg Strain with records to 290 eggs a year—\$1.50 per 15 Delivered. By Parcel post. Fred Astling, Constantine, Mich.

BUFF LEGHORNS—Cockerels, pullets, hens or pens; anything you wish in Buff Leghorns. Get the laying strain. Dr. William Smith, Petersburg, 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 FOUSTRY FARM, R. No. 37, Phoenixville, Pa.

CHICKS, We ship thousands each season. Ten varieties, Ancona's \$11 a hundred, free booklet. Freeport Hatchery, Box 12, Freeport, Mich.

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 for hatching. Park's 200-egg strain barred Plymouth Rocks. 15-\$1.50; 25-\$2.50; 30-\$3.00; 50-\$4.50. J. E. Grimm, Conklin, Mich.

EGGS—S. C. W. Leghorn, good as offered. 19 eggs \$1.00, 30 eggs \$1.75. M. MAYER, Jr., Merrill, Mich.

EGGS for hatching. Baby chicks a specialty. From pure R. C. Rhode Island Reds and S. C. White Leghorns. \$1.00 per setting. Baby chicks \$10 per 100. Book your orders now. Red & White Poultry Farm, H. A. Nicholls, Prop., Ellake, Mich.

Ferris Leghorns—200 Egg Strain. One customer's flock averaged 102 eggs in six winter mos., another 181 eggs in 10 mos., another 199 eggs in 12 mos. You can do as well. Eggs, chicks, breeding stock from hens with records up to 251 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. 16 years square dealing—thousands of pleased customers. FERRIS LEGHORN FARM, 834 Union, GRAND RAPIDS, MICH.

For Quick Clearance, a few Buff Rock Cocks and Cockerels at \$2 each. Hens and pullets \$1.50 each. Blue Orpingtons, both sexes \$2 each. Must be sold before February 10th. Winners at Chicago, 1911, '12, '13, '14 and '16. Bird Lawn Farm, Lawrence, Mich.

FWLER'S BUFF ROCKS. Cockerels \$2 to \$3. Hens \$1 to \$3. White Holland Turkey Toms \$5; hens \$3. R. B. FOWLER, Hartford, Michigan.

For Sale—White Rock Cockerels 9 lbs. \$3.00, 8 lbs. \$2.50. Fine white birds. Order early. Mrs. Elsie M. Robinson, Petersburg, 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.

Mammoth Bronze Turkeys Toms all sold. A few choice hens at \$4.00 each. COLLAR BROS., Conklin, Mich., R. No. 2.

MAMMOTH Bronze Turkeys Mammoth Toulouse Geese and B.P. Rock and S.C. White Leghorn Cockerels, Berkshires, both sex all ages. Chase's Stock Farm, Marlette, Mich. R. 1.

Pine Crest White Orpingtons Strong, vigorous birds best of egg strain, eggs after Feb. 1st., baby chicks later. MRS. WILLIS HOUGH, Pine Crest Farm, Royal Oak, Michigan.

R. I. Reds, Both Combs, Most Popular Michigan Eggs for hatching. Baby Chicks. Write for catalog. INTERLAKES FARM, Box 39, Lawrence, Michigan.

RHODE ISLAND REDS and PLYMOUTH ROCKS. Males 5 to 12 lbs. according to age \$2 to \$5; P. R. hens weight 5 to 9 1/2 lbs., eggs 15 for \$1.00; P. R. eggs \$6 per 100. Mammoth Bronze Tom Turkeys, 8 to 8 1/2 lbs. according to age \$6 to \$25, 10 eggs \$5. A. E. Cramp ton, Vassar, Mich.

R. and S. C. R. I. Red Cockerels, eggs and baby chicks. W. Emden Ganders, B. O. Ducks. Fine stock. Prices reasonable. O. E. Hawley, Ludington, Mich.

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 AND SINGLE COMB Rhode Island Reds Eggs, per 15, \$1.50 by parcel post; from special pens, 20c each by express, Jennie Buell, Ann Arbor, Mich.

Silver Golden and White Wyandottes. First prize winners at Iowa. Choice cockerels reasonable. Send for circular. C. W. Browning, R. 2, Portland, Mich.

S. C. B. Minorca 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, chicks, safe delivery a n d fertility guaranteed. M. MALONEY, R. No. 1, Kalamazoo, Michigan.

Walnut Corner White Wyandottes, both fancy and utility, a nice lot of cockerels for sale. Satisfaction guaranteed. W. J. Scholl, Bremen, Ohio.

White Wyandotte a fine lot, male and female at low price and write your wants. DAVID RAY, 202 Forest Ave., Ypsilanti, Mich.

White Wyandotte Cockerels From Bred-to-lay stock. \$2.50, \$3.00 and \$3.50. EGGADAY POULTRY RA NCH, Marshall, Mich.

WHITE Wyandotte Cockerels. \$2.50, \$3.50 and \$5 each. From High Bred stock and heavy layers. A. FRANKLIN SMITH, Ann Arbor, Michigan.

White Wyandottes, Duston's strain, 3 firsts at Van Buren Co. Fair. 25 fine cockerels \$3 each, 2 for \$5. VERN MOORE, R. No. 1, Hartford, Mich.

White Holland Turkeys. Fine Large Healthy Stock. Toms \$6.00; Hens \$5.00. Alden Whitcomb, Byron Center, Michigan.

Pekin and Rouen Drakes \$2.00 each or 3 for \$5.00. Sheridan Poultry Yards, Sheridan, Michigan.

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
Incubators and Brooders
"In 25 World's Greatest Matches Belle City Won With Perfect Hatches" 402,000 in use. Get the whole wonderful story told by the championship winners themselves in my big Free Book, "Hatching Facts" On Practical Chicken Raising With book comes full description and illustration of my incubator and brooder in actual colors—the kind used by U. S. Government and leading Agricultural Colleges—that won the "Tyco's" Cup—that will win big success and cash profits for you—
My 10-Year Money-Back Guaranty—My Low Prices
—same as last year. Freight prepaid. My 1-2-3 months' Home Test—all facts, proofs, particulars—100 photographs of prize winning hatches—also my
\$1300 Gold Offers
Conditions so easy anyone may receive biggest pay. Biggest chance anyone ever had to make extra money with a hatching outfit.
Learn how I paid one Belle City user \$166.25, another \$50, many from \$45 down. Everything comes with free book. Write me today. Jim Rohan, Pres. Belle City Incubator Co., Box 14, Racine, Wis.

Compound Incubators

Get Bigger Hatches
Any Place—Any Time—Any Climate
These famous Metal covered machines make big money every year for poultry raisers. High quality material, superior construction, simplicity and ease of operation all combine to give the greatest hatching value.
Don't Pay Two Prices
In this incubator you get the greatest hatching value at the lowest possible price. Will last a life time.
C. P. Shirey, writes: "I hatched 222 chicks from 222 fertile eggs. I have not done this with any other machine and I have tried a number."
FREE 1916 Catalog FREE
Don't buy an incubator anywhere at any price until you get our new 1916 catalog and rock bottom prices. You owe it to yourself to know all about this wonderful incubator. Write today—sure.
WARSAW INCUBATOR CO.
Box 249, Warsaw, Ill.

CANDEE
B COLONY
BROODER
Beginner Lost Only One Chick
"I put 272 chicks under my Candee Colony Brooder that were 6 weeks old last Wednesday and I still have 271 and I never saw or run one of your Brooders or any other until now."—St. John, Jackson, Mich., May 31, 1915.
That gives the experience of Candee operators last year and pictures of their plants. Tells about the coal-burning brooder automatically regulated. Large roomy hover. Poultry raising will be more profitable brooding with the Candee.
Candee Incubator & Brooder Co.
Dept. M, Eastwood, N.Y.
Licensed by W. A. Schleit Mig. Co., Inc.

WE PAY \$80 A MONTH SALARY and furnish rig and all expenses to introduce our guaranteed poultry and stock powders. BIGLER COMPANY, X 682, SPRINGFIELD, ILLINOIS

BIG FOUR POULTRY JOURNAL—The Practical Poultry Paper for Practical Poultry Raisers; only paper devoted exclusively to the poultry interests of Illinois, Indiana, Michigan and Wisconsin. It's YOUR paper; you should read it. Bright, Snappy, Live. SPECIAL OFFER: 6 mos. Trial Subscription 15c. Send stamps. Big Four Poultry Journal, Desk 26, Chicago.

POULTRY.

Single Comb White Leghorns

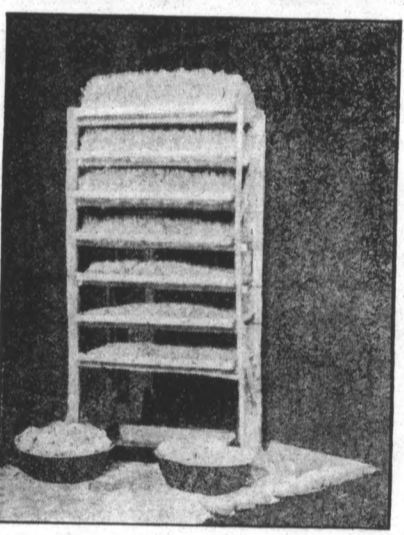
Day-Old Chicks & Eggs for Hatching
Cheap feeds, free range, bulk of work offhanding the flock in winter, when the farmer is least occupied, makes poultry raising doubly attractive and profitable for the farmer. Our stock bred for vigor and egg production, makes raising easy and profit certain. Just a word about our maturing: Every male bird used in our breeding pens has been sired by males out of 200 egg hens or better. We are offering chicks and eggs for hatching from these males mated to large, vigorous, early-maturing females, at very reasonable prices. Two thousand chicks per week. Absolute satisfaction, full count and safe delivery guaranteed on all orders. We are booking orders for early spring delivery. Write us for prices and further particulars.
Hillandale Poultry Farm,
Krentel Bros., Props., East Lansing, Mich

a dust bath is one of the ways nature provides so that the fowl can dust herself and thus get rid of the parasites that cut down winter production and annoy the old biddy.

One of the best louse powders that can be had was first formulated in Cornell University by R. C. Lowry. It is prepared by mixing three-fourths of a pint of gasoline, one-fourth pint of crude carbolic acid and two and one-half pounds of plaster of paris. Force this mixture through a sieve to break up the lumps, dry in the air and when dry cork tightly. This mixture will remain good indefinitely. When you want to apply the powder, punch some holes in the top of a tin can and use this as a shaker. The fowl may be held by the legs with her head down. In such a position the feathers fall readily away from the body so that the powder may be distributed through to the skin. Frequent applications of this louse powder are to be recommended. In building the poultry house, particular attention may well be paid to its location, the construction ought to be such that the coop will be dry, liberally ventilated, accessible to the sun and capable of being easily disinfected.
Ingham Co. I. J. MATHEWS.

A HOME-MADE OAT SPROUTER.

The accompanying picture represents an oat sprouter which I made myself and have used with success. In the basin on the right are 53 eggs and 76 in the basin on the left. This shows the gain made by my hens, in one week after I began feeding the



Sprouted Oats Increase Egg Supply.

sprouted oats, with no other change in their diet.

The sprouter was set out on the porch in order to get a good light, but its regular place is in the kitchen, by a window near the kitchen range.

It is simply a frame with cleats on, to hold trays made of one-half-inch by one-inch wood strips, with galvanized wire screen tacked on the bottoms.

This greatly simplifies the raising of early chicks, also gets the good fertile eggs, from which to hatch the early chicks. For feeding chicks it is best to cut off the top of the oats and clip them up in short lengths with the shears, feeding the rest to the hens.

Little ducks and geese require great amounts of green feed and in an extremely dry time one of these sprouters might spell the difference between success and failure.

The trays should be very loose in the frame, or they will stick when wet up. In making a sprouter allow one square inch of space for each hen to be fed and a few extra inches for the early broods of chicks, or else allow an extra tray from which to cut the tops for the chicks. Seven trays are used in this one as this allows a tray for each day in the week.

The tray that is emptied in the morning is refilled at once, with oats that have been soaked over night in warm water.

Ten minutes twice a day will care for this sprouter and there is no lamp to be cleaned, filled and kept burning,

all the time, also all danger of musty or moldy oats is avoided by the open trays.

The top tray is fed each morning and all the others are sprinkled with warm water and moved up a notch, putting the freshly filled tray in at the bottom. All are well sprinkled again at night.

One of these sprouters painted a nice, dark green, combining nicely with the green of the oats, makes a pleasing object in the kitchen, giving a hint of spring time.

One of the neighbors proclaims mine "prettier than any house plant." It is not only pretty, but a grain-saver, and the materials for making can be readily picked up on nearly any farm.

Kalamazoo Co. MRS. M. KENNEDY.

SHIPPING HATCHING EGGS.

The season is almost at hand when many of us will be buying, and not a few selling, eggs for hatching. It is, therefore, pertinent to discuss at this time methods of shipping hatching eggs. It is not true that faulty packing causes much trouble in the line of poor hatches, for the average breeder of fancy stock knows how to ship his eggs. Usually more of the fault lies with the receiver who does not give the eggs proper attention when they arrive at their destination. This attention should consist of a period of quiet before they are put in the incubator or under the hens. It is inevitable that the delicate cells and germs get more or less disturbed by a long trip—this in spite of skillful packing and careful handling.

The express companies handle most of the hatching eggs that are transported, as it is undoubtedly true that they do it with more care than the post office department. Yet it is also true that long shipments are made by parcel post and good hatches result. Several manufacturers of parcel post boxes put out cartons that carry eggs with a considerable degree of safety. All packages containing eggs should be so marked, whether they are to be sent by express or parcel post.

Fiber boxes are best for mail shipments but baskets are better for express. It is undoubtedly true that a basket is handled with more consideration than a box by express company employes. The basket should be just about large enough to hold the shipment with the necessary packings. A bushel basket will hold about 100 eggs, while a ten-pound grape basket will hold one setting. The grape basket is scarcely strong enough, however, but baskets of that size do not cost very much.

When the basket is ready to pack, line it with newspapers and put one inch of excelsior over the bottom. Wrap each egg separately in soft paper and place them in the basket, the small end down. Place them one inch apart and fill all spaces with excelsior, crowding it in carefully. Put on another layer of excelsior and repeat until the basket is full. The secret of success is to keep the eggs from coming in contact with each other during the journey. Round up the top with excelsior and cover with canvas, sewing it to the basket all the way round. Eggs packed in this way are seldom broken. No eggs should be shipped unless they have perfect shells. Hens in the breeding pens should be fed all the oyster shells and green food they will eat. This gives the eggs strong thick shells.

C. H. CHESLEY.

It was found that 15 days after mating the hens still laid fertile eggs. When mating was repeated after a period of more than 16 days, the first fertile egg was generally laid three days later. It was found possible to influence the color of the eggshell by pairing a cock of a breed which has yellow or brown eggs with a hen of another breed that lays white eggs, or vice versa, the breed of the hen alone being responsible for the color of the eggshell.

Farm Commerce.

How to Sell the Big Crops

WHEN in any industry the supply catches the demand, the problem in that industry becomes no longer production. It becomes sales. The question is not how to produce, but how to sell.

In previous articles we have shown that the problems of the jobber, the retailer and the consumer are also the problems of the producer. In analyzing our big problem we said, "Here, on the one hand, are food supplies for the people of this country and here on the other are the one hundred million inhabitants. How can we economically distribute these crops to these people?"

Our conclusion was that the 2,500 produce jobbers with their 7,500 traveling salesmen and the 300,000 retailers whom they supply are virtually the producer's agents who perform a distinct function—a necessary service—in assembling perishable products in the market centers and distributing them to the consuming public. We have said very little regarding the producer's relation to this public.

Agricultural science and modern methods of farming have made it possible for the grower to economically produce fruit which should yield a fair return on the investment. Let us assume that we have a marketing system which is fair and satisfactory to every factor engaged in the distributing process. The crop comes to the consumer in good condition and at a reasonable price because the marketing is efficient and not extravagantly or dishonestly performed. The consequent good will and demand of a satisfied public is reflected to the retailer and passes through the jobber's salesmen and the jobber to the producer. The crop moves rapidly and everyone is satisfied.

But, even under these almost perfect conditions, suppose the country produces too much. The crop accumulates in the jobbing and retail stores. It rots in the grower's fields. Prices take a slump. But the public is already consuming its fill. Low prices offer little inducement to buy. Salesmanship is speeded up without result. There is an oversupply.

What can the grower do? What forces has he at his command? To whom can he appeal? Let us see what others have done under these conditions.

Last year the California lemon crop increased 132 per cent over the output of the preceding year. Americans use lemons most freely in cold drinks in hot weather. They use them in a comparatively small way throughout the year for culinary and other general purposes. A low retail price will not greatly stimulate the use of lemons in the summer time, when temperature is the real controlling factor.

Last year the most significant factor in the lemon situation was the abnormally cool weather that prevailed over the United States after the middle of May. Only twice after April did the average eastern temperature reach the normal; twice only after May did the central temperature reach normal; and at no time after May did the average temperature reach normal in the western sections of the United States.

When war was declared in 1914 it was generally believed that importations of foreign lemons would be stopped. Wholesale and retail prices rose to abnormal figures in the fall, the trade had no advices regarding importations and the dealers stocked up for the future with high-priced fruit.

But imports were not stopped. Italian lemons were shipped here in the

usual quantities in the fall. The wholesale price dropped \$3.00 per box in thirty days. However, the wholesale and retail trade had large supplies of high-priced foreign and California lemons on hand, a condition which prevented a free distribution of the fruit for many weeks.

The reduction of the duty of one cent per pound in 1912 lowered the overhead charge on foreign fruit 72 cents per box, and because the war cut off the usual continental European markets this country received a flood of Italian lemons of all grades whenever it was figured that overhead charges could be realized. The New York price of foreign lemons for the year 1915, which is a leading factor in establishing values throughout the country, was only slightly more than the average cost of producing and placing a box of lemons on the cars in California.

But people ate no more lemons. The California lemon growers figured their acreage. They found that they had 20,000 acres of lemons four years old or under, which would soon throw an additional supply upon the market. It would be necessary to increase the consumption of lemons in the United States and Canada from 75 to 100 per cent within four or five years.

The California lemon growers are well organized. They have had years of hard experience in growing and marketing citrus fruits. They selected national advertising as the practicable implement for increasing the consumption of American lemons. Good advertising, they logically reasoned, would teach people the hundreds of useful ways for employing this versatile fruit. So the Exchange set aside \$100,000, or two cents per box, for its first year's campaign to make people use two lemons where they formerly used one.

This was not their first experience with advertising. Twenty years ago when the state shipped 5,000 cars of citrus fruits there was a great cry about overproduction. Today a normal crop is 50,000 carloads. Six-sevenths of this is oranges.

From 1894 to 1914 while the population of the United States increased 47 per cent the California citrus shipments increased 724 per cent. During this period Florida citrus shipments increased 95.2 per cent and imports 26.6 per cent.

Under these conditions it is said that F. Q. Story, the Exchange president, for ten years or more, rose regularly at directors' meetings, when the coming year's policies were being settled, and advocated advertising of oranges to the consumer to increase consumption, until by sheer persistence he got an experimental appropriation and demonstrated that he was right.

Probably this orange advertising was the first big attempt to advertise a perishable crop. And it made good. It taught people to eat more oranges. They got the orange habit. The fact that this year the Exchange spent \$250,000 on its orange advertising and appropriated \$100,000 to launch a lemon campaign, indicates how much importance these men place upon consumer demand as a factor in bringing to them fair returns on their investment.

The California raisin growers faced a similar situation. As they developed raisin growing around Fresno they reached a stage in which raisins could no longer be produced at a profit. Prices got down to one and one-half cents and two cents, and some growers were abandoning their farms—leaving the fruit to rot on the vines. The growers banded together through nec-

PERE MARQUETTE

How there came to be a Pere Marquette Railroad

"As it stands today, the Road embraces 41 lines originally entirely separate. These lines gradually grew into three small systems—the Flint & Pere Marquette in eastern Michigan; the Chicago & West Michigan in western and the Detroit, Grand Rapids & Western in the central part of the state. These three systems were consolidated in 1900 to form the Pere Marquette Railroad.

A FEW FACTS

"The Pere Marquette Railroad didn't 'just happen'. It is the result of a steady growth due to manifest need. The little lines couldn't furnish connected service—consolidation resulted.

AND A FEW THOUGHTS

Today we have through service to nearly all the principal cities of the state. Would we return to the old order of things? Not we! This Railroad is here today by virtue of the efforts of some of the best men Michigan ever had. We of this day cannot know of their struggles, their determined perseverance, their sacrifices, their indomitable courage and heroism. But the bands of steel stand for all these.

"This is Michigan's Railroad. It serves us in Michigan principally, and it must be conserved in order that it may continue to serve us as it should. It needs your word of encouragement. It needs your business. It needs your help in securing adequate rates. These things will enable the Road to so maintain itself as to guarantee its future on a basis which will meet your transportation demands and promote the progress and development of the state. We are doing everything possible to bring about this result. Are you doing your part?"



Paul H. King
Operating Receiver,
Pere Marquette Railroad.

Talk No. 2

Locate in Virginia

Virginia Farms are selling now for \$25.00 per acre and up—adapted to the growing of Corn, Alfalfa, Fruits, Grains, Grasses and the production of Beef and Dairy cattle. One farm of 500 acres yielded its owner a Hay crop of over 2,000 tons last year from Alfalfa alone. Lands are advancing in value each year—thousands of acres are waiting to be tilled by the most progressive methods of the day, to yield highly profitable returns. Virginia claims the finest apple growing section in the world.

Come to Virginia—now is the time to buy. Healthful climate, abundant rainfall, good water, public schools and churches. Cheap and quick transportation to the great Eastern markets enables you to command highest prices for your products. Virginia offers the greatest of opportunities for farmers and investors.

Send for hand-book with map and other literature telling about the opportunities to be had in the Old Dominion. Write now—while you think of it.

G. W. KOINER
State Commissioner of Agriculture
RICHMOND, VA.

"The Profits In Poultry Keeping"

172 PAGE BOOK ON POULTRY FREE
Big FREE 1916 Poultry Guide. Describes Cyphers Popular-priced Incubators, 3 styles—8 sizes, 20 years leadership. Write today. CYPHERS INCUBATOR CO., Dept. 35, Buffalo, N. Y. New York Boston Chicago Kansas City Dallas

POULTRY PAPER 44-124 PAGE periodical, up-to-date; tells all you want to know about care and management of poultry for pleasure or profit. Four months for 10 cents. POULTRY ADVOCATE, Dept 117, Syracuse, N. Y.

BEES PAY BIG PROFITS
Raise your own honey. We start you right. Send today for Bee Supply Catalog and Sample copy of American Bee Journal. Oldest Bee paper in America—all FREE. A. G. WOODMAN CO., Dept. 18, Grand Rapids, Mich.

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

WANTED—AN IDEA: Who can think of simple thing to patent? Protect 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.

PATENTABLE IDEAS WANTED. Manufacturers want Owen Patents. Send for 3 free books; inventions wanted, etc. I help you market your invention without charge. RICHARD B. OWEN, 125 Owen Bldg., Washington, D. C.

PATENTS That Protect and Pay
Send Sketch or Model for FREE BOOKS AND ADVICE FREE
Watson E. Coleman, Patent Lawyer, Washington, D. C.

WANTED. Man to run grain and stock farm, must be thoroughly competent; one with technical knowledge would be more favorably considered. Farm about 400 acres, near Detroit. Application with references only will be considered. Box M. 212, In Care Michigan Farmer.

25 POST CARDS. Twenty Five 10c
Fine Post Cards for Dime. Send 2 cent stamp.
G. P. WIXSON, MASON, MICH.

DOGS

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

For Sale: Thoroughbred Sable & White scotch collie puppies natural breeders—Males \$8.00, Females \$3.00. G. R. JONES, Sherwood, Michigan.

155 Egg \$9.85 BUYS BOTH
FRAIGHT PAID EAST OF ROCKIES

Biggest Offer Yet!
BIG 155-Egg Incubator, Made of genuine California Redwood. Natural Finish. Double Doors. Deep Nursery. Thermometer. Tester. Self-regulating. Has hundreds of air cells to protect eggs from outside changes. Hot water heat. Cold-rolled, one-piece corrugated copper heater. Won't leak. Biggest bargain ever offered on a guaranteed incubator and brooder! Order from this ad or write for new 1916 catalog.
Progressive Incubator Co., Box 164, Racine, Wis.



Champion

TOLEDO MADE FOR THE WHOLE WORLD'S TRADE

Dependable Spark Plugs

Write Your Own Guarantee

THE Champion Guarantee is "Absolute satisfaction to the user. Free repair, replacement or your money back."

If in your opinion that way of putting it does not afford you every possible protection in buying Champion Spark Plugs, write your own guarantee and forward it for our signature.

"Absolute satisfaction to the user" makes you the judge of our product, and if you are not absolutely satisfied, you have your choice of three remedies "Free Repair," "Replacement" or "Money Back."

And always you are the counsel, judge and jury, all in one, and there is no appeal from your verdict.

But such is the dependability of Champion Spark Plugs and such is the thoroughness of our inspections, that our guarantee is scarcely ever brought to mind, except as we see it printed on the cartons in which we pack our product.



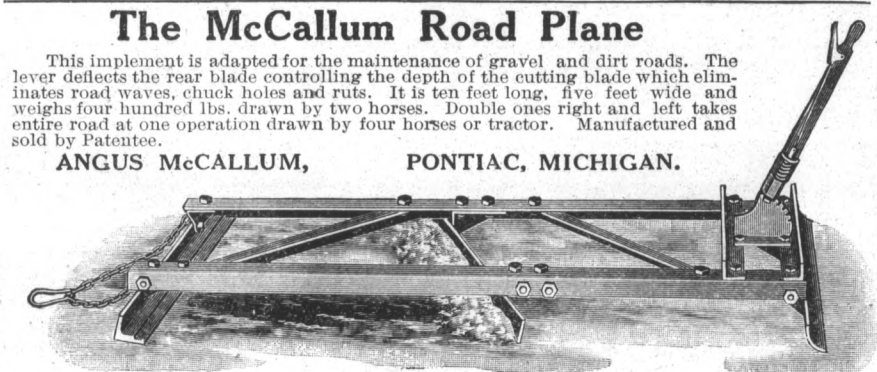
X Spl. 3/8 in., 75c
All Ford Cars since 1911 are equipped at the factory with this plug.

Champion Spark Plug Co., 505 Avondale Ave., Toledo, Ohio

The McCallum Road Plane

This implement is adapted for the maintenance of gravel and dirt roads. The lever deflects the rear blade controlling the depth of the cutting blade which eliminates road waves, chuck holes and ruts. It is ten feet long, five feet wide and weighs four hundred lbs. drawn by two horses. Double ones right and left takes entire road at one operation drawn by four horses or tractor. Manufactured and sold by Patentee.

ANGUS McCALLUM, PONTIAC, MICHIGAN.



WANTED-Honest, Energetic Men

In every county to sell our big line of goods direct to farmers. EXPERIENCE NOT NECESSARY. We fully instruct you. Farmers, laborers, mechanics, or any men willing to work can make

\$1000 to \$3000 a Year

handling our big sellers. Exclusive territory given. We furnish you the capital. You furnish the team to carry the goods. Be your own boss in a pleasant, permanent and profitable business. Write at once for full particulars, giving age and occupation.

THE DUOFORM COMPANY,
Dept. 2, North Jara, N. Y.



ALSIKE \$5.00 PER BU.
AND TIMOTHY \$5.00 PER BU.

INVESTIGATE--Best and Cheapest Seeding Known.

Alsike Clover and Timothy mixed. Fully 1-3 alsike, a big bargain. Greatest hay and pasture combination grown. Write for Free Sample and 100 page catalog and circulars describing this wonderful grass mixture. Beats anything you can sow and ridiculously cheap. We handle only best tested re-cleaned seed guaranteed. Write before advance.

A. A. BERRY SEED CO., Box 531, Clarinda, Iowa

CLOVER

We have the kind you used to sow. Large, plump, blue seed; over 99% pure and high vitality. Remember, every five pounds of dead seed and impurities to the bushel, adds \$1.00 to cost; also, that the country is flooded with seed containing five to fifteen pounds to the bushel that will not grow.

The C. E. DePuy Co. PONTIAC MICH.

Low Prices. Take no chances by sowing damaged local seed this year. Make big money by sowing our guaranteed Northern and Canada Seed Oats. Extra fine Pure-Bred Quality. Wonderful yields. Be sure and get our low prices, also our valuable Profit-Sharing Exclusive Field and Grass Seed Guide with samples you want Free. Address AMERICAN MUTUAL SEED COMPANY, Dept. 581 48rd and Robey St., Chicago, Illinois.

OATS

TIMOTHY \$4.50 PER BU.
Bags extra at 20c each. Send us your order.

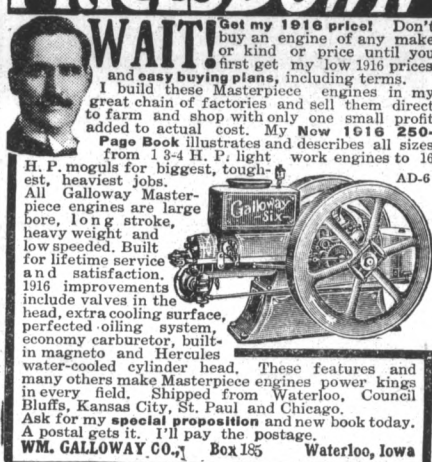
Young-Randolph Seed Co. Owosso, Michigan

PRICES DOWN

WAIT!

Get my 1916 price! Don't buy an engine of any make or kind or price until you first get my low 1916 prices and easy buying plans, including terms. I build these Masterpiece engines in my great chain of factories and sell them direct to farm and shop with only one small profit added to actual cost. My Now 1916 250-Page Book illustrates and describes all sizes from 1-3-4 H. P. light work engines to 18 H. P. moguls for biggest, toughest, heaviest jobs. All Galloway Masterpiece engines are large bore, long stroke, heavy weight and low speeded. Built for lifetime service and satisfaction. 1916 improvements include valves in the head, extra cooling surface, perfected oiling system, economy carburetor, built-in magneto and Hercules water-cooled cylinder head. These features and many others make Masterpiece engines power kings in every field. Shipped from Waterloo, Council Bluffs, Kansas City, St. Paul and Chicago. Ask for my special proposition and new book today. A postal gets it. I'll pay the postage.

WM. GALLOWAY CO., Box 185, Waterloo, Iowa



LETZ FEED MILL

Self-Sharpening Silent-Buhr

Grinds 1,000 to 3,000 Bushels Per Set Buhrs

Saving in cost of grinding plates quickly pays for mill. Plates are self-sharpening, self-aligning. Running empty doesn't injure plates. Grinds all kinds of grain, hay, snap corn, millet, grass or weed seeds—wet, dry, oily. 25% fuel saved.

10 Days Free Trial

Write today for free trial offer—give h. p. of your engine. We will send you, free, a valuable 48-page book "Economy and Efficiency in Feeding Farm Animals."

LETZ MFG. CO.
210 East Road, CROWN POINT, IND.



Write for Samples and Prices of

White Bonanza Seed Oats

One of the best varieties grown in Michigan.

Young-Randolph Seed Co. Owosso, Michigan

essity—a factor which has compelled successful organization in many agricultural industries.

The raisin growers' selling organization agreed to take a certain definite fixed figure—I believe it was three and one-quarter cents per pound—all the raisins of those who joined the association. They bought about eighty per cent of the total crop, but found when they came to sell it that they had something like 10,000 tons left on their hands.

Their crop was increasing with what appeared to them alarming rapidity and the danger was what to do when a bumper crop came. They said, "We are raising sixty to seventy-five thousand tons now. What will we do when we have a crop of 100,000 tons?"

There was just one solution—make people eat more raisins. Advertising was the method.

In the fall of the first year, 1914, they appropriated \$100,000 for the campaign, and in the spring showed their faith by another appropriation of \$160,000.

They were not so much interested in establishing their own label or taking trade from other brands as in increasing the consumption of raisins. They wanted to sell their brand where none was sold before, and they succeeded.

One outlet they went after was the baking trade. They said, "Here, Mr. Baker, we are going to advertise raisin bread. You can bake and sell it and we will grow the raisins." They now have several thousand bakers making raisin bread, and some of them bake a thousand loaves a day. That means each such baker takes annually something like 16,000 lbs. of raisins.

If you drive around through the fields of Fresno it seems as though the whole world would never use the amount of raisins they are growing, and when they tell you that this year they expect to pack 110,000 tons, you feel sure they have an over-supply. But 110,000 tons distributed over one hundred million people means about two pounds per capita. In England, as a matter of fact, the average raisin consumption is said to be five pounds per person.

The National Dairy Council, at its first annual meeting in Chicago in November, 1915, gave as its object the "promoting of the dairy cow and all interests dependent upon her, through co-operative and united effort." It is proposed to raise a fund of \$150,000 to \$200,000 a year for a period of three years to cover an advertising campaign similar to that which proved so successful in disposing of lemons, oranges, raisins and other foodstuffs. The dairymen believe that the public is losing sight of the advances made in the dairy industry and the actual food values which dairy products now contain.

They must convince the public that dairy products are pure, healthful and safe to eat, that they are economical, and that they possess high nutritive value. And they must co-operate to enforce regulations which will make their products all that they are represented to be. They must distribute recipes showing new uses, publish educational matter showing why dairy products are valuable foods and prove to the consumer that such products are derived and distributed under healthy conditions.

The per capita consumption of milk is something less than half a glass per day; of butter less than one-twelfth of a pound; of ice cream, about two teaspoons full; cheese .009 of one pound.

Take for analysis, the average daily per capita consumption of cheese. When weighed out it is hardly enough to bait one hole of a mouse trap. A rough estimate of the retail price realized for cheese produced in this country shows that the consumer pays \$70,000,000 for cheese every year.

If the dairymen could induce every person in this country to eat every day a piece of cheese of sufficient size to bait two holes to a mouse trap, it would mean an increase of \$70,000 in the cheese business alone.

If, by telling people why they should use more dairy products or how they could use more, they could make every person in this country consume one-half glass of milk, one-twelfth of a pound of butter, .009 of a pound of cheese and two teaspoons of ice cream, in addition to what they already eat, it would increase the dairy business by \$635,000,000.

Incidentally, helping the milk, butter or cheese industries would help the dairy cow industry and that would benefit every industry that is in any way dependent upon the dairy cow.

A consumer demand, equal to or greater than the supply of dairy products, would be the first essential in achieving the above conditions.

Honey is being gathered, mixed, packed, marketed and nationally advertised. Mingling the products of many hives plus careful grading makes uniformity possible. The shipper has a uniform product of dependable grade and a regular supply. He is ready to call the public's attention to his goods.

The Florida Citrus Fruit Exchange is seeking to make people eat more grapefruit and oranges—particularly their own brands—through an advertising campaign similar to that of the California orange and lemon growers.

Several brands of butter are being placed on the market and advertised in the face of conditions, not unlike those under which honey is popularized.

An association of northwestern apple shippers has concentrated its entire appropriation on a campaign in New York City. They are attempting not only to make people want more apples and more of their particular brand, but they are striving to teach them just when they should buy each variety shipped under that label. They realize that a satisfied customer is the best advertising obtainable and that buying the right variety at the right time—that is, when that particular variety is at its best—means maximum satisfaction to him who eats it.

The California walnut growers are striving to overcome certain difficulties which are peculiar to their industry by going direct to the consumer. They pack walnuts in one-pound boxes and tell people about them through national advertising.

Long ago other industries realized the value of consumer demand and consumer good will. The manufacturer studied supply and demand while the producer planted his orchards.

The necessity for a large consumer demand is even greater with a perishable crop than a manufactured article. The manufacturer can decrease his factory output, but fruit and most perishables are grown and matured regularly, regardless of economic conditions.

When the number of producers narrows down to a few they restrict production to what the consumers will take, although not necessarily by agreement. Each makes what he finds he can sell, and the net result is restricted production.

But when we come to conditions under which our big crops of fruits and perishables are produced, we find, instead of a few hundred starters, thousands of people engaged in the industry. It is neither practicable nor desirable to narrow this field to a few people who control the industry. Now, that means this: either the demand must be stimulated to keep ahead of the supply or else when the supply catches the demand a disaster will overtake the industry. When the supply catches the demand and there is a little surplus distributed among these thousands of producers, the latter get in a panic to sell and each endeavors to get from under the impending crash. The result is that prices fall to where they only cover the cost of distribution and nothing is left for the growers.

Illinois. D. W. FRANCISCO.

COLD STORAGE HOLDINGS OF APPLES.

The quantity of apples stored in coolers, according to the Office of Markets, appears to be 14.8 per cent more on February 1 this year than were held on February 1, 1915. The barreled apple holdings show an excess of 33.6 per cent over a year ago, while boxed apple holdings are 25.2 per cent below those of last year. Apples moved out of storage faster during the month of January than in December. At the end of January 27.3 per cent of the December holdings had moved from the coolers.

Crop and Market Notes

Michigan.

Muskegon Co., Feb. 16.—Have from 10 to 11 inches of snow, and winter grains are in fine condition. Farmers have plenty of roughage but need more grain. Stock mostly marketed. Very few sheep here. Hens have started laying. Not much maple syrup made. Butter-fat 31½c; eggs 28c; chickens, alive 13c; dressed hogs 8c; beef 8c; wheat \$1.25; corn 82c; beans \$3.25; red kidneys \$4; potatoes \$1; hay \$14 @15 per ton.

Branch Co., Feb. 16.—Not much snow at present and ground is frozen but no ice. Winter grains look good. Stock not doing well, there being a scarcity of grains. Much corn is spoiling, some of it being unfit for feed. Hens have started laying. Wheat is \$1.25; corn 65c; oats 42c; potatoes 60c; eggs 20c; butter 25c; butter-fat 30c.

Mecosta Co., Feb. 16.—There is some snow. Fall grains have suffered from previous freezing and thawing. Not much stock fed this winter, feed being scarce in some sections. Beans are about sold and the potato outlook is not so favorable as a short time ago. They are now worth 75@80c. Some farmers are selling. Butter-fat 30c; eggs 35c; hogs \$7.50; fat cattle \$6 per cwt.

New York.

Orleans Co., Feb. 17.—We have a heavy fall of snow and zero weather. Winter grains in fairly good condition. Farmers seem to have plenty of feed for own use but none to sell. About the average amount of feeding stock. Fruit growers are somewhat discouraged, being unable to realize from their stock in storage no higher prices than were offered in the fall. Eggs are abundant, bringing 25c; milk 4¼c per quart, wholesale; potatoes \$1; hay \$18.

Niagara Co., Feb. 17.—There is now enough snow for sleighing, though the ground was bare for a long time, and winter grains showed signs of heaving. Grains nearly all disposed of. Hens are laying some; eggs 28c; wheat is \$1.20; shelled corn 85c; pea beans \$3.50; red kidneys \$4; hay \$15@18.50.

Ohio.

Fairfield Co., Feb. 15.—Ground has been bare much of the winter and wheat is in bad shape. Farmers have plenty of feed for own use. Usual amount of cattle and hogs fed, the latter being pretty well marketed now. Hens are laying well. Eggs retail at 25@28c; butter 25@30c; wheat \$1.25; corn 70c; oats 42c; potatoes \$1; hay \$15; cattle \$5@8; hogs \$7.50.

Highland Co., Feb. 16.—Lack of snow has damaged wheat and rye. Farmers have plenty of roughage; cattle and hogs nearly all sold. Hens are not laying well. Wheat \$1.20; corn 68c; oats 48c; beans \$3.50; potatoes \$1; hay \$15; cattle \$6@8; hogs \$7.50@8.

Minnesota.

Lyon Co., Feb. 15.—Weather severe since first of January, and snow is deep. Usual amount of stock is being wintered. Public sales are well patronized and bidding is high. Seed corn situation is serious. Butter-fat 30c; butter 25c; eggs 35c; oats 40c; wheat \$1.20; hogs \$7.50; cattle \$6.

Nebraska.

Lincoln Co., Feb. 15.—Snow is practically gone and wheat is looking good. Cattle are in good condition. A large portion of fat cattle are marketed. Hens are laying well; eggs 22c; cream 27c; wheat \$1.12; cattle \$7@7.50; hogs \$7@7.40.

Smith Co., Feb. 12.—Wheat looking well. Farmers have plenty of rough feed, and are well supplied with stock cattle; fat stock well marketed. Hens are laying a little at present. Milk 5 @7c per quart; butter-fat 27c; wheat \$1.12; corn 57c; potatoes \$1.50; hogs \$7@7.40.

Otoe Co., Feb. 15.—Have had a cold steady winter with six inches of snow at present. Wheat in good shape so far. Not many cattle feeding in this section. Feed is plentiful. Hens have started laying. Butter 28c; milk 6c a quart; potatoes \$1@1.25; hay, prairie \$5@6; alfalfa \$7@8; cattle \$60@100 per head; horses \$100@225; corn 62c.

Word of Honor

WHEN a man puts his name on a product he gives a pledge to the public which only Quality can make good. The value in a well-established name, therefore, is in the honor and good faith for which it stands.

On every Firestone tire there is stamped the name of the founder of the world's largest exclusive tire company—**H. S. Firestone, the president of the Firestone Tire and Rubber Co.**

On the roughest roads, in the worst weather, you can rely on the extra toughness and thickness of the Firestone tread and sidewall. The built-in values mean most miles per dollar.



Red Side Wall—Black Tread

The Distinctive Firestone Trade-Mark

Tube Bag Free

Fine rubberized tube bag free for your dealer's name and make of your tires. Also Free Book, "Care and Repair of Tires," No. 25

Firestone Tire and Rubber Company

"America's Largest Exclusive Tire and Rim Makers"

Akron, O., Branches and Dealers Everywhere

Firestone

NON-SKID TIRES

Just a Postal Will Do

This Book FREE

SHOWS HOW TO Make Old Cars Look Like New

Your old car with all its mileage is really better than new. It is just fairly limbered up. The new parts have become acquainted with each other and your car is ready to get down to business. All it needs is a little paint, varnish or finish here and there to restore its just-from-the-factory freshness. Our free book shows everything needed to rejuvenate your car.

Peerless Mohair Top Dressing—Leaves cloth soft and pliable.

Peerless Leather Top Dressing—Renews finish.

Peerless Lining Dye—Colors stains and faded parts.

Peerless Cushion Dressing—Brightens and renews the finish.

Peerless Lamp Enamel-Gloss—For brass, nickel or iron.

Peerless Lamp Enamel-Dull—One coat covers solid.

Peerless Jet Black Fender Japan—Heavy bodied, rich gloss.

Peerless Ford Top Dressing—Makes an old top look like new.

Peerless Cylinder Enamel-Black—Saves cylinder and all metal parts from rust.

Peerless Cylinder Enamel-Gray—Heat, grease or gasoline can't hurt.

Peerless Mirroroid—Used with brush or cloth to restore lustre.

Peerless Anti-Rust Rim Paint—Robs tire changing of its horrors.

Peerless Auto Body Polish—Brightens all varnished parts.

Peerless Extra Fine Black Japan—For use on wood or metal.

Peerless Battery Box Black—Proof against battery acids and fumes.

Peerless Liquid Wax—Easily applied in light even coat.

SEND FOR YOUR COPY TODAY FREE

Tell how to keep your car "Looking young." You or your painter can easily apply any of our products. Sold by garages, dealers, jobbers. If yours can't supply you write us direct. Remember this special money-saving book is FREE.

THE COLUMBUS VARNISH CO. 263 Cozzens St., Columbus, Ohio.

FOR SALE: 200 A. Clay Loam Farm, 120 A. pasture easily cleared; barn 40x64 ft., full basement, tool shed 18x40; good 10 room house, basement; woodshed; ice house; chicken coop; hog house; garage; 70 ton silo; good well; windmill; water in house and barn; gas lighting plant for house and barn also gas range, 4½ miles from county seat and 9 miles from railroad. Unlimited free pasture available. Terms \$50 per acre, part cash. Owner R. Shepard, Mio, Mich., R. 1.

Virginia Farms and Homes.
FREE CATALOGUE OF SPLENDID BARGAINS.
R. B. CHAFFIN & Co., Inc., Richmond, Va.

Farmers: You can get more value for your Michigan than any where in the United States. If interested write for free catalogue.
BYERS & BROWN, Coldwater, Michigan

Southern Farms, Mississippi, Tennessee. Cheap land for corn, stock or general farming. Martin & Cole, 118 Madison Av., Memphis, Tenn.

For Sale: 640 acres of good land in whole or in part; a rare bargain if taken soon. Inquire of C. C. Whitney, 229 Shearer Bldg. Bay City, Mich.

For Sale: Forty acres good uncleared land in Montmorency County. No buildings, small timber, good roads. Railroad building to town two miles away. \$30. J. S. Riegel, 533 Lincoln Ave., Toledo, Ohio.

144 A. STOCK FARM. 1 Mile to City. Stone road. Balance Flow land. Fine Bldgs. \$10 A. Easy Terms. Owners, Evans-Tinney Co., Fremont, Mich.

69 Acres for sale or rent, joining village, tomato factory 20 rds. from farm, 30 mi. from Detroit. Mrs. Carrie Waters, Belleville, Mich.

GLADWIN CO. FARMS and Stock Ranches pay big dividends. My new farm list just out, tells why. It's free. **U. G. REYNOLDS, GLADWIN, MICH.**

FOR SALE: 120 acre farm 110 acres cleared, 10 wood-land. Good barn and house. Sanilac Co. Inquire John Higgins, Baraga, Mich.

FOR SALE—80 Acres—25 acres good young Timber. Balance Flow land. Snug House and Barn. Price \$1200.00, with \$1200 Cash, Balance Ten years 3 per cent. Address Owner, **M. H. Lemen, Howell, Michigan.**

Wanted—A good honest man with teams and machinery to work 166 acre farm on shares at Ortonville, Mich. Apply J. F. WEHNER, 119 Pulford St., Detroit, Mich.

5-ft. Boiler Steel Hogtroughs \$1.95

Write for free descriptive circular
"Made of Heavy Boiler Steel 1-3 in. Thick"
FULTON SUPPLY CO., 1603 Fulton St., Chicago, Ill.

Farms and Farm Lands For Sale

Choice Virginia Farms

The South—The Homeland

FOUR TO SIX TONS OF ALFALFA, 50 to 100 bushels of corn to the acre, \$100 to \$500 an acre from fruit or truck, opportunities for the stock raiser and dairyman, a climate which means two to four crops a year, pleasant home locations, attractive land prices, are things the South offers homeseekers. Our publications and special information on request.

M. V. RICHARDS
SOUTHERN RAILWAY Ind. and Agr. Com'r, Southern Ry. Meble 2 Chas. Room 78 Washington, D.C. Meble 2 Chas. 633 3rd Fl. N.Y.

ALONG CHESAPEAKE & OHIO RAILWAY

At \$15.00 an acre and up. Mild climate, fertile soil, abundant rainfall, cheap labor. Convenient to good market, schools and churches. Write for free illustrated booklet, "Country Life in Virginia." Address **K. T. CRAWLEY, Indus. Agt., C & O Rwy., Room 1022, Richmond, Virginia.**

For Sale by Owner. 160 acre farm in Clinton Co, village and market, one mile from car line, eight miles from Lansing. Can be bought on easy terms for about half price asked for other farms in the same locality. **S. M. HOLT, LANSING, MICH., 108 SO. SYCAMORE STREET.**

Markets.

GRAINS AND SEEDS.

February 22, 1916.

Wheat.—Although wheat values show a heavy decline for Monday, the average quotations for the past week were on practically the same level as those for the previous week. The market has resolved itself into a proposition of getting the grain to European countries. Whenever the opportunity for export is restricted on account of lack of cargo space, prices here sag, and on the other hand, any increase in ocean transportation facilities allows prices to jump up. Values in England were the highest last week they have been since the Franco-Prussian war in 1871, and are ruling about 75c above American seaboard prices. Argentine Republic has advised its farmers to hold their wheat, stating that European needs will require all the available product regardless of the price consideration. Crop news in this country suggests that much damage has already been done by exposure, especially in the southern wheat growing states. Primary receipts are liberal although the visible supply shows a decrease of 2,269,000 bushels. One year ago No. 2 red wheat was quoted at \$1.53½ per bushel. Last week's Detroit quotations were:

	No. 2	No. 1	May
	Red	White	
Wednesday	1.32½	1.27½	1.36
Thursday	1.32	1.27	1.35½
Friday	1.32½	1.27½	1.36
Saturday	1.31	1.26	1.34½
Monday	1.27½	1.22½	1.30

Chicago.—No. 2 red wheat \$1.25@1.27½; May \$1.24½; July \$1.20½ per bushel.

Corn.—Corn has been coming to the market freely, which with a poorer eastern demand and the depressing influence of the wheat trade, caused a liberal decline in quotations since last Friday. The visible supply increased 2,241,000 bushels last week. A year ago No. 3 corn was quoted at 73c per bushel. Last week's Detroit quotations were:

	No. 3	No. 3
	Mixed	Yellow
Wednesday	74	76
Thursday	74	76
Friday	74	76
Saturday	73	75
Monday	72	74

Chicago.—No. 4 yellow corn 68@71½c; May 76½c; July 76½c.

Oats.—The demand for oats is only moderate, which with a fair volume of stocks, permitted values to decline with those of corn and wheat on the bearish market Monday. The visible supply is 341,000 greater than a week ago. Primary receipts have been fairly liberal. One year ago standard oats were quoted at 58½c per bushel. Last week's Detroit quotations were:

	No. 3
	Standard
Wednesday	51
Thursday	51
Friday	51
Saturday	50
Monday	48½

Chicago.—Standard oats 45½@47¼c; May 46½c; July 44½c per bu.

Rye.—Market is quiet with No. 2 at \$1, or 1c below last week's price.

Barley.—Values are easier with malting at Milwaukee quoted at 68@74c and at Chicago 66@75c.

Beans.—The demand for beans is active, offerings small and local prices are 2@5c higher. Immediate, prompt and February shipment \$3.65; March \$3.67. At Chicago prices ruled steady with pea beans, hand-picked, at \$3.80@3.85; prime choice \$3.65@3.70; red kidneys \$5.20@5.40.

Peas.—At Chicago the market is quoted at \$2.40@2.50 for field peas, sacks included.

Clover Seed.—Higher; prime spot \$13.30; March \$12.50; prime alsike \$10. At Toledo prime cash \$13.27½; prime alsike \$10.

Timothy Seed.—Prime spot \$3.80 a 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 \$7; seconds \$6.70; straight \$6.50; spring patent \$7; rye flour \$6. Feed.—In 100-lb. sacks, jobbing lots are: Bran \$26; standard middlings \$25; fine middlings \$30; cracked corn \$33; corn and oat chop \$29 per ton.

Hay.—No. 1 timothy, \$18.50@19; standard timothy \$17.50@18; light mixed \$17.50@18; No. 2 timothy \$15@16; No. 1 mixed \$14@15; No. 1 clover \$10@13.

Chicago.—Choice timothy \$18@18.50; No. 1 do. \$15.50@16.50; No. 2 \$13.50@14.50.

DAIRY AND POULTRY PRODUCTS.

Butter.—Trade rules firm with prices for best grades 1½c higher. Extra creamery 32c; firsts 31c; dairy 21c; packing stock 18c.

Elgin. The demand is good for all kinds, including storage stock. The receipts of extras is not equal to the demand. Prices are 1½c higher. Based on sales prices are 33c.

Chicago.—The business is good for all grades. Extras are in demand and bring premium prices. Receipts are light and are not held long. Extra creamery 32½c; extra firsts 31@32c; firsts 27½@30c; extra dairies 31c; packing stock 19@19½c.

Eggs.—Buying in small lots prevails because it is expected that the mild weather will bring lower prices. Current receipts are quoted at 22c; candled firsts 22½c.

Chicago.—Mild weather had a weakening effect on the market. Prices are about 1½c lower than last week. Buyers are only taking small quantities. Firsts 22@22½c; ordinary firsts 21@21½c; miscellaneous lots, cases included 20@22½c; refrigerator stock 12½@15c, depending on quality.

Poultry.—Increased receipts have caused easier feeling but prices remain unchanged. Turkeys 16@17c; spring turkeys 21@22c; fowls 14@18c, according to quality; spring chickens 16½@18c; ducks 18@19c; geese 17@18c per pound.

Chicago.—A moderate demand exists on local account and the feeling is fairly firm. Many poor and thin geese are coming and are hard to sell. Turkeys, young and old 12@19c; fowls 11½@15½c; springs 17c; ducks 15@17c; geese 10@15c.

FRUITS AND VEGETABLES.

Apples.—Apples are moving freely and offerings are ample. Greenings \$2.50@3.50; Spys \$3.50@4; Baldwins \$3@3.50; Steel Red \$4@4.50. At Chicago the movement is somewhat freer. Quality is only fair and peddlers are the chief buyers. No. 1 Greenings are \$2.75@3 per bbl; Jonathans, No. 1 \$3.50@4; Baldwins \$3@3.25; Wagehens \$2.25@2.75; Spys \$3@3.75.

Potatoes.—Steady and in fair supply. Carlots on track, white and red \$1@1.05 per bushel. At Chicago the market ruled quiet. Concessions are being made by handlers to stimulate trade. Michigan whites are selling at 88@92c per bushel. Other kinds sell from 80@92c.

WOOL AND HIDES.

Wool.—A stronger undertone is developing in the wool trade with prices holding firm to higher. England has placed an absolute embargo on East India wools, thus curtailing supply to the advantage of holders. Domestic offerings are in greater demand with fleeces in particularly small supply. Quarter-blood Ohio unwashed wools sold at Boston at 39c last week; half-bloods 36c, with the corresponding Michigan grades at 36@37c and 32@33c respectively.

Hides.—No. 1 cured 16½c; do. green 14c; No. 1 cured bulls 13c; do. green 10c; No. 1 cured calf 21c; do. green 20c; No. 1 horsehides \$4.50; No. 2 \$3.50; No. 2 hides 1c lower than the above; sheepskins, as to amount of wool, 50c@\$.2.

GRAND RAPIDS.

Potatoes have sold here at 70@80c during the past few days and the buying price at Greenville and other loading stations is around 75c. White pea beans are also worth less just now, with quotations at \$3.10. Fresh eggs are bringing 20@21c and No. 1 dairy butter is quoted at 23c. Grain prices at the mills are as follows: No. 2 red wheat \$1.25; oats 50c; rye 85c; corn 75c; buckwheat 75c.

DETROIT EASTERN MARKET.

Only a moderate amount of business for the season was transacted Tuesday morning. Cabbage was selling freely at 60@65c per bushel; apples moved slowly at 80c@1.50 per bushel; carrots \$1.25; potatoes 90c@1.20; parsnips 70@80c; new rhubarb 15@25c a bunch; green onions eight bunches for 25c. Hay is moving slowly at \$18@22 per ton.

LIVE STOCK MARKETS.

Buffalo.

February 21, 1916.

(Special Report of Dunning and Stevens, New York Central Stock Yards, Buffalo, N. Y.)

Receipts here today: Cattle 171 cars; hogs 100 d. d.; sheep and lambs 48 d. d.; calves 1000 head.

With 171 cars of cattle here today the market was very slow, the choice

tidy shipping cattle selling mostly steady to 10c lower, but the light and plain cattle sold very mean and bulk of them went 10@25c lower. There was a good healthy trade in the cow market and also the bulls. We look for a fair run of cattle here next Monday and a steady trade.

Our hog trade was rather slow at the opening and prices generally 5c lower on the best grades, while pigs were extremely dull and fully a quarter lower than Saturday's best time. Bulk of the sales were around \$8.60, a few selected lots a little more; pigs generally \$7.75, with light quotable as high as \$8.25; roughs \$7.50@7.60; stags \$5@6. About everything sold that arrived in time for market and the outlook for the next few days, full steady.

Market was active on sheep and lambs today and prices 5c higher than the close of last week. All sold and we look for steady prices the balance of the week.

We quote: Lambs \$11.50@11.75; cull to fair \$8@11.40; yearlings \$8.50@10.25; bucks \$4.50@7; handy ewes \$8.25@8.50; heavy ewes \$8@8.25; wethers \$8.75@9.25; cull sheep \$4.50@7; veals, good to choice \$11.75@12; common to fair \$8@11; heavy \$6@9.

Chicago.

February 21, 1916.

Cattle, Hogs, Sheep. Receipts today 17,000 57,000 14,000 Same day 1915 12,012 39,189 8,924 Last week 40,621 251,528 76,134 Same wk 1915 38,322 219,285 52,441

Shipments from here last week were 10,192 cattle; 54,642 hogs, and 16,983 sheep, comparing with 12,949 cattle; 67,978 hogs, and 14,315 sheep a week earlier, and with 7,336 cattle; 24,455 hogs, and 2,580 sheep a year ago. Hogs marketed here averaged 206 lbs.

This week opens with a small Monday cattle supply and firm to 10c higher prices, while hogs are firm to 5c higher at \$7.65@8.40. Sheep and lambs are unchanged.

Cattle were marketed much less liberally last week than a week earlier, as the glutted condition of the market at that time brought about reductions of 25@40c per 100 lbs. in most descriptions. This fall in prices made most stockmen less eager to hurry their cattle to market, and supplies offered for sale were so materially lessened that the decline was speedily recovered. There was not much trading in steers last week below \$7 or above \$8.75, with sales of the best class of heavy steers at a range of \$9@9.65 and a sale of five head of prime steers that averaged 1,618 lbs. from the University of Illinois at \$10.25. The commoner class of thin steers of light weight sold for \$6@7.45, with a medium grade of steers taken at \$7.50 and upward and steers that passed for good at \$8.25 and upward. The best yearling steers received brought \$9, with no prime ones offered. Butchering cows and heifers had a good outlet on the basis of \$5@7.40 for cows and \$5@8.75 for heifers, with comparatively few fat little yearling heifers going as high as \$8. Cutters sold at \$4.15@4.95 and canners at \$3@4.10, while sales took place of bulls at \$5@7.25. Calves sold during the week at a range of \$4.50@11.25, with a late top at \$11. Weakness was developed in the cattle trade on Thursday, and prices lost 10@15c of their early gains, with local packers apparently stocked up and shipping orders lacking. During the entire week there was a poor market for Illinois dairy cows, as many of these cows have been condemned on post-mortem recently, but sound Wisconsin dairy cows had a fair outlet. The university \$10.25 steers were Shorthorns of fancy finish and had been used in the class work at the college. Above \$9 there was a slim showing of cattle. Limited sales were made of stock cattle at \$6@7.25. The outlet for this class of cattle has caused them to sell 40@50c higher, with four states, Illinois, Pennsylvania, Delaware and Michigan ready to accept Chicago stock. Illinois requires that stock going out must be held in quarantine 21 days and be inspected.

Hogs made another high record for the winter packing season last week, with a top at \$8.50, the local and shipping demand being extremely good; most of the hogs sold brought over \$8, prime heavy shipping barrows going the highest and prime light shipping hogs at prices not much below them. Recent receipts have averaged in weight 203 lbs., comparing with 199 lbs. a week earlier, 223 lbs. one year ago and 221 lbs. two years ago. Extremely liberal runs of hogs are apt to show up at the opening of the week, and nearly 80,000 hogs reached here on Monday last week. Pigs failed to sell as well as a week earlier. The week closed with sales of heavy packing hogs at \$7.95@8.30, the best heavy shipping and butcher hogs at \$8.30@8.37½, light bacon hogs at \$7.60@8.12½, light shipping hogs at \$8.15@8.30, and pigs at \$5.50@7.35.

It is not possible to maintain prices for fat lambs, yearlings and sheep at their highest quotations all the time, but even on sharp reactions, prices are still far higher than in any former winter. The opening of the feeder outlet is an important feature, feeding lambs selling last week at \$10.35@10.40, the highest prices ever paid in the Chicago market for lambs to go out to feed lots, and standing more than \$2.50 per 100 lbs. higher than the best price paid for feeders in 1914. The week's close saw lambs selling at \$8@11.50, yearlings at \$8.50@10.10, wethers at \$7.25@8.50, ewes at \$4.50@8.25 and bucks at \$5.50@6.75.

Horses were plentiful last week and in good local and shipping demand at about recent prices, with liberal purchases of horses for the French army. Farm workers were offered at \$90@150, while inferior animals went as low as \$50@75. Drafters were salable at \$200@285, according to weight and quality, with few choice enough to go over \$240. Desirable chunks brought \$165@220, and a few pairs of big horses sold at \$500@540.

NOTICE TO BEAN GROWERS.

The Michigan Bean Growers' Association will meet Thursday, March 2, 1916, at the Agricultural College during the week of the Round-up Institute. Important plans for this next year's crop will be discussed.—Jas. N. McBride, State Market Director.

BOOK NOTICE.

"The Marketing of Farm Products," by Dr. L. D. H. Weld, of Yale University, formerly of the University of Minnesota. This book aims to set forth the fundamental principles of market distribution as applied to agricultural products. The author has attempted to describe the marketing conditions as they are, and has made no effort to propose any definite or comprehensive program for improvement. He believes that investigations of marketing practices have not proceeded far enough as yet to make such a program possible. The book is divided into 21 chapters which cover, in an unprejudiced manner, the whole range of marketing factors. It contains 480 pages and can be secured through the Michigan Farmer office at \$1.50 per copy. Published by the Macmillan Company, New York City.

The British government plans to take over all the large distillery properties and turn them into munition factories.

Michigan Butter and Egg Shippers' Association will meet in Detroit February 29, at Hotel Statler.

Forage Crop

All Michigan farmers interested in forage crops should have a copy of our new spring catalogue which gives valuable information about Sweet Clover, Sudan grass, Cow Peas and Soy Beans, Alfalfa, Winter Vetch, etc. Write today. A postal card will bring it to you free of charge. Address

Alfred J. Brown Seed Company, Grand Rapids, Mich, and please mention the Mich. Farmer

RUFUS B. HOLMES CO.

High and Riopelle Sts. Detroit, Mich. Commission Merchants

Poultry, Live or Dressed, Dressed Hogs, Calves, Sheep and Eggs. Reference, Peninsular Savings Bank, Sullivan Packing Co. Shipments Solicited. Satisfaction Guaranteed.

HAY Ship your good quality to us. Highest Market Prices. E. L. Richmond Co., Detroit.

HAY OUR NEW LOCATION— 623-625 Wabash Bldg., Pittsburgh, Pa. Daniel McCaffrey's Sons Co.

THE HARSTER 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 lions after your interest. Financially backed by over \$1,000,000.

WE WILL PAY THE HIGHEST OFFICIAL DETROIT Market Quotation day of arrival delivered here, and will pay premiums whenever possible. American Butter & Cheese Co., Detroit, Mich.

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.

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

MAGIC egg tester tells hatchable eggs before incubating. 1 year trial guarantee. White and Brown Leghorn eggs \$3.50 per 100. Catalog free. Welday, M. F. Seville, O.

Ask For Tiger Brand LIME



Lump Lime, Hydrated Lime or Ground Stone.

We sell our lime under this brand because farmers who try it once want to buy the same quality again. The Tiger Brand guarantees strength and uniformity.

There is a dealer near you who sells Tiger Brand. Write for his name and our FREE Lime Book.

THE KELLEY ISLAND LIME & TRANSPORT CO., 901 Leader Bldg., Cleveland, Ohio

FRESH FROZEN Winter Caught Herring

We will deliver at your door by parcel post 8 pounds of dressed and sealed herring, ready for the frying pan for **\$1.00** or 12 pounds Round herring for **\$1.00**

or 7 pounds smoked herring ready to eat for **\$1.00** Three boxes for \$2.75. Fish Guaranteed to arrive in good condition. Offer good to April 1st. Send cash, money order or check. **Do It Now!**
The Ranney Fish Co., West 11th St., Cleveland, O.

Learn Music At Home!

Lessons Free **New Method—Learn To Play By Note—Piano, Organ, Violin, Banjo, Mandolin, Guitar, Cornet, Harp, Cello or to sing.** Special Limited Offer of free weekly lessons. You pay only for music and postage, which is small. No extras. Beginners or advanced pupils. Everything illustrated, plain, simple, systematic. Free lectures each course. 16 years' success. Start at once. Write for Free Booklet Today—Now **U. S. SCHOOL OF MUSIC, Box 270** 225 Fifth Avenue, New York City

STEEL MANTLE BURNERS ARE THE BEST Increase your Lamp and Lantern Light Three Times. No Smoke. No Odor. Fit Common Kerosene Lamps and Tubular Lanterns. Every Burner Fully Guaranteed. If Your Dealer Doesn't Keep Them Send His Name and Address and your Name and Address and \$5 for a Sample or \$1.00 for 3 sizes. Local, County and State Agents Wanted. Write for Free Particulars Today. The Season is On. Now is the Time to Sell Them. **The Steel Mantle Light Co., 830 Huron St. Toledo, O.**

Millions of Trees PLANTS, VINES, ROSES, ETC.

The oldest, largest and most complete nursery in Michigan. Send for catalog. Prices reasonable.

I. E. ILGENFRITZ' SONS CO., The MONROE NURSERY, Monroe, Mich

Plant Trees Grown at MONROE, MICHIGAN

If you want vigorous, hardy stock, if you want reliable varieties, if you want reasonable prices and satisfaction with your purchase, send for a catalog and secure your trees and plants from

THE MICHIGAN NURSERY COMPANY Winkworth & Sons, Monroe, Michigan. Growers for Sixty-seven Years.

AUGUSTA BASKET COMPANY

Manufacturers of Best Quality Fruit Packages, Baskets, Crates, etc. Write for 1916 catalog and price list, **Augusta, Mich.** Box 52.

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 81 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 we ever grew." Etc. Write to Secretary Mich. Experiment Association, East Lansing, Mich.

2 year, 4 to 5 ft. high—ideal size for 100 Apple Orchard Planting. Send for Free Catalog Apple, Pear, Peach, Cherry, Plum, Small Fruit, Ornamental trees, Roses and Shrubs. Buy direct from grower—One-half agent's prices. **\$10** Denton, Williams & Denton, Wholesale Nurseries, G. W. Williams, Mgr., Box 141, Dansville, N. Y.

WHITE SWEET CLOVER Specially 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.

Finest and Best Plants Grown. All kinds, also Farm Seed, etc. 1200 Acres. 40 page Catalog Free. **W. N. SCARFF,** Box F, New Carlisle, Ohio.

2-yr. for \$9.00. 100 currants 2-yr. for \$2.00. Strawberry plants. Catalogue free. **Woodbine Nurseries, Geneva, O.**

120 bu. per acre The Corn Belt Oat. Description, prices and sample free. **Muncytown Stock Farm, Flat Rock, Mich.**

SWEET CLOVER SEED. White and large biennial yellow. \$9.00 bu. of 60 lb. **R. E. PURDY,** Falmouth, Ky.

THIS IS THE LAST 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 Market. February 24, 1916. Cattle.

Receipts 2278. There was another heavy run of cattle at the local yards this week, but in all other departments the receipts were far below those of a week ago. Most of the roads gave satisfactory service but the Michigan Central fell behind and there is a good chance for improvement in their service, which it is hoped will be remedied.

The cattle trade was dull and everything but canners and bulls were big 25c lower than they were a week ago and on Wednesday quite a large number went over unsold at dark, the demand for stockers and feeders was dull, but speculators took hold freely and helped out wonderfully. The close on Thursday was dull at the decline.

Milch cows of quality were scarce and the few offerings brought strong last week's prices. Common grades dull. Best heavy steers \$7.50; best handy weight butcher steers \$6.50@7; mixed steers and heifers \$6@6.25; handy light butchers \$5.50@5.75; light butchers \$5@5.25; best cows \$5.50@5.75; butcher cows \$4.75@5; common cows \$4.25@4.50; canners \$3@4; best heavy bulls \$5.50@6.25; bologna bulls \$5.25@5.50; stock bulls \$4.50@5; feeders \$6@6.75; stockers \$5@6.25; milkers and springers \$4@80.

Bishop, B. & H. sold Mich. B. Co. 5 butchers av 831 at \$6.50, 5 cows av 1120 at \$5.50, 2 bulls av 1625 at \$5.75, 1 canner wgh 1010 at \$4.25; to Sullivan P. Co. 7 steers av 907 at \$6.70, 5 butchers av 850 at \$5.40; to Thompson Bros. 11 steers av 1074 at \$7.25; to Hammond, S. & Co. 20 do av 933 at \$7.85, 5 do av 800 at \$6.50, 2 do av 1040 at \$8; to Bray 17 cows av 1007 at \$5, 4 do av 800 at \$4.25, 1 do wgh 1150 at \$6, 1 do wgh 860 at \$3; to Parker, W. & Co. 1 bull wgh 1590 at \$5.75; to Sullivan P. Co. 3 cows av 920 at \$4.50, 3 do av 1060 at \$5.60, 1 heifer wgh 790 at \$6.60, 8 steers av 991 at \$7.10, 1 cow wgh 1190 at \$5.75; to Breitenbeck 8 steers av 1000 at \$7.10, 4 cows av 1000 at \$5.50, 1 do wgh 1050 at \$4.50; to Bresnahan 8 do av 900 at \$4.50, 11 do av 1066 at \$4.75, 1 bull wgh 1400 at \$6; to Hammond, S. & Co. 1 steer wgh 680 at \$6, 9 do av 724 at \$6.15, 1 do wgh 850 at \$7.50, 4 cows av 900 at \$4.15; to Bray 4 cows av 840 at \$4, 2 do av 750 at \$5.50, 4 do av 1100 at \$5.65, 8 do av 944 at \$4.25; to Sullivan P. Co. 20 steers av 1073 at \$6.85, 16 do av 1162 at \$7.35, 3 do av 917 at \$6.50, 6 cows av 902 at \$5, 3 do av 1070 at \$5.75, 6 do av 1123 at \$5.50, 2 do av 990 at \$4.25.

Reason & S. sold Thompson Bros. 4 bulls av 1330 at \$5.75, 2 butchers av 835 at \$5.50, 7 do av 500 at \$5.90; to Sullivan P. Co. 7 cows av 990 at \$5.80, 1 cow wgh 1370 at \$5.25; to Nagle P. Co. 8 steers av 872 at \$7.10; to Bray 1 cow wgh 1070 at \$4, 7 do av 1040 at \$5.60, 1 steer wgh 1500 at \$6.75; to Wyness 10 do av 938 at \$7.50, 3 do av 903 at \$6; to Newton B. Co. 3 cows av 1003 at \$4, 4 do av 1072 at \$5.75; to Dunne 1 steer wgh 1130 at \$6.75; to Bray 9 cows av 955 at \$4, 3 do av 983 at \$6.

Veal Calves.

Receipts 847. Good veal calves sold about the same as on Wednesday or last week; one or two small bunches of extra fancy brought \$12, but bulk of the good went at \$11@11.50. Common and heavy grades were very dull at \$7@10.

Haley & M. sold Hammond, S. & Co. 2 av 105 at \$9, 20 av 145 at \$12; to Hopp 2 av 300 at \$7.

Sheep and Lambs.

Receipts 3055. The supply of sheep and lambs was very light and the quality common, the few good ones bringing \$11 per cwt. The demand for good grades was strong and many more could have been disposed of at good prices. Best lambs \$11; fair do \$10@10.50; light to common lambs \$8.50@9.50; yearlings \$10; fair to good sheep \$6@7.50; culls and common \$5@5.50.

Sandel, S., B. & G. sold Thompson Bros. 8 lambs av 50 at \$5.50, 13 sheep av 95 at \$5.50, 2 do av 90 at \$7, 14 lambs av 65 at \$10.35.

Bigelow sold Sullivan P. Co. 10 lambs av 55 at \$8.50, 40 do av 65 at \$10.60.

Roe Com. Co. sold Sullivan P. Co. 5 lambs av \$5 at \$7, 28 do av 75 at \$10, 8 do av 65 at \$10.50.

Hogs.

Receipts 7593. The hog trade was active and good grades were fully 25c higher than they were a week ago, or strong at Wednesday's prices. Heavy grades \$8.45@8.50; light and mixed \$8@8.30; good pigs \$7.25@7.65; light thin pigs \$6.50@7.

FREE

We Give You This Fine Leather Tobacco Pouch



Illustration one-third of actual size

Every smoker appreciates a leather tobacco pouch. This handy, serviceable, Tuxedo Draw-Pouch is made of fine, soft, flexible tan leather, with a draw-string and snap that close pouch tight and keep the tobacco from spilling.

Send us 10c and your tobacco dealer's name, and we will mail you prepaid, anywhere in U. S., a 10c tin of TUXEDO and this handsome Leather Draw-Pouch. We gladly make this offer to get you to try TUXEDO.

Tuxedo

The Perfect Pipe Tobacco



TUXEDO is the one tobacco that every man can smoke all day long, the year 'round, with the greatest enjoyment and comfort.

Because the exclusive "Tuxedo Process" makes TUXEDO so delightfully mild and free from all trace of "bite", that TUXEDO cannot irritate the most sensitive throat or tongue.

Convenient, glassine wrap-5c ped moisture-proof pouch 5c

Famous green tin with gold 10c lettering, curved to fit pocket 10c

In Tin Humidors, 40c and 80c

In Glass Humidors, 50c and 90c

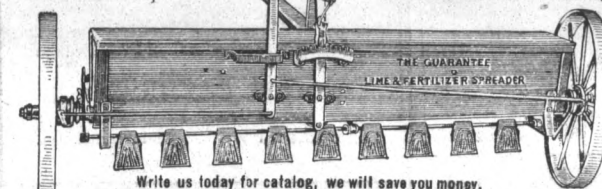
THE AMERICAN TOBACCO COMPANY

111 Fifth Ave., New York City

Room 1199

"Low and Easy to Fill." "The Guarantee Spreader" "HARD to WEAR OUT"

WRITE FOR FREE CATALOG



Write us today for catalog, we will save you money. Guarantee Manufacturing Co., Dept. B53, Baltimore, Md.

Has acquired a national reputation for spreading LIME, GROUND LIMESTONE, commercial fertilizers, and etc. THE GUARANTEE SPREADER will pay for itself by properly applying one car of these expensive fertilizers, EVENLY, and has more good points than any other spreader on the market. The special patented features such as our spider-triangle-steel-blade-force feed, and spreading attachment that will spread evenly or sow in rows. Our exclusive shifting clutch quickly throws machine in and out of gear from seat and is a real necessity for saving material. Completely equipped with accurate acre-mark, indicator, screen, lid, seat, neck-yokes, double and single-trees. No hing extra to buy. WE PAY FREIGHT. A dependable spreader at a low price.

Milking Time Cut In Half Cleaner Milk—Double Profits

Instead of eight cows, you or your hired man can milk 13 to 33 in practically the same time and without getting tired over the job. Moreover you can milk the last few cows just as clean and good as the first if you are using a

Hinman Milker Outfit

Thousands are already doing it and they tell us they wished they had realized years before how simple the Hinman was to operate and clean.

HINMAN MILKING MACHINE CO., 74-84 Elizabeth St., Oneida, N. Y.



OUR FREE CATALOGUE will tell you and show by pictures how simple the Hinman Milkers are—how they do the work—why the milk is so much cleaner and how they will increase your profits. A letter or postal card asking for this book will bring it right away. Send for a copy today.

Ensley says — Fence-Paint-Roofing

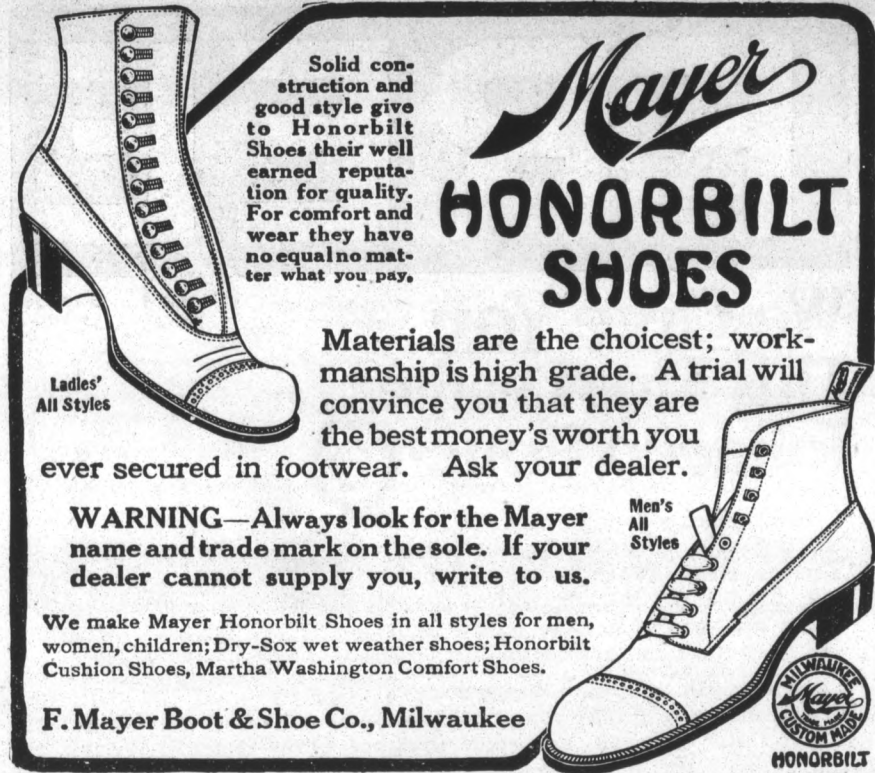
Before you put up that fence—or do that roofing or painting job, get Ensley's Free Catalogs—one on each subject. You absolutely can't afford to buy anywhere before you study these books—greatest ever issued on Fence, Paint and Roofing.

ENSLEY'S PRICE IS RIGHT Quality, too. Enormous output makes attractive prices. Big stock. Prompt delivery. You get what you want when you want it. Catalogs give you complete information—many helpful suggestions. You always get a square deal from Ensley. Send a postal now—specify which catalog you want—Fence, Paint or Roofing.



THE F. B. ENSLEY CO., 262 ENSLEY BLDG., DETROIT, MICH.





Mayer HONORBILT SHOES

Solid construction and good style give to Honorbilt Shoes their well earned reputation for quality. For comfort and wear they have no equal no matter what you pay.

Materials are the choicest; workmanship is high grade. A trial will convince you that they are the best money's worth you ever secured in footwear. Ask your dealer.

WARNING—Always look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.

We make Mayer Honorbilt Shoes in all styles for men, women, children; Dry-Sox wet weather shoes; Honorbilt Cushion Shoes, Martha Washington Comfort Shoes.

F. Mayer Boot & Shoe Co., Milwaukee

Ladies' All Styles
Men's All Styles

Practical Science.

GASOLINE AND ALCOHOL.

BY FLOYD W. ROBISON.

The present high price of gasoline has brought into prominence again the possibilities of the use of substitute fuel. It will be recalled that a number of years ago, after severe importuning on the part of certain industrial interests, together with some general acquiescence on the part of farmers throughout the country, Congress passed a bill authorizing the use for industrial purposes of a product which subsequently became known as denatured alcohol.

It has been assumed for some time that alcohol was a perfectly feasible product to use as a fuel, but as is quite generally known the exceedingly high cost has made its use impracticable, especially so because of the fact that gasoline and kerosene are still used to a great degree as fuels.

Certain men with foresight began to realize, however, that the time was coming, in fact, apparently almost here, when the ordinary standard fuels would be very nearly exhausted, at least the price would become so high that unless other fuels were obtainable it would be a restriction upon industry.

Alcohol as a Beverage is Losing Favor.

We have never been interested in alcohol in this country up to date, except as a beverage, and there has been a decidedly growing disposition on the part of our people to eliminate it from the channels of commerce insofar as its present usage is concerned. With this view we are very highly in sympathy but we are appreciative of the immense value to industry which alcohol may furnish, provided its manufacture is so regulated and adjusted that it will reach industrial channels. The present price of alcohol per gallon is about \$3.00, and the internal revenue tax on this product is about \$2.50, which makes the alcohol when tax free, marketable at about fifty cents per gallon. It is possible to use alcohol at fifty cents per gallon in certain industries, but as a fuel oil it is still too expensive.

What is Denatured Alcohol?

When Congress passed the act permitting the use of alcohol tax free under certain conditions for industrial purposes, the purpose of the act was to furnish it at a price which would encourage its use in the industries. In so doing it became necessary as we have intimated before, to place certain restrictions around its use so that the product which was produced tax free could not be used for beverage purposes. This called for the production of certain denaturants; in other words, the mixing with the grain alcohol, certain other ingredients which did not materially alter its character as a fuel and for other industrial purposes, but which did make it undesirable to use as a beverage. The original denaturant which gained the most favor was wood alcohol. Wood alcohol is very similar in some respects to grain alcohol, but is regarded as poisonous and a dangerous product to use in a beverage. So similar is it in its various actions to grain alcohol that we have had to contend with it in manufactured articles of food, particularly extracts, in previous years, but its effects have been such that it is considered an exceedingly dangerous product to use in grain alcohol except that some persons are so addicted to the use of alcoholic drinks that even wood alcohol is not a sufficient deterrent and something decidedly stronger or of a more disagreeable taste has to be used, to discourage such use of the product. Tobacco extract has been used and chloroform, and a great variety of substances have been used as denaturants.

In chemical parlance the difference between gasoline and alcohol may be illustrated by showing their respective compositions in general. Gasoline is what we call an unsaturated hydrocarbon, that is to say, it is a combination of the elements carbon and hydrogen only and when it burns it burns with a smoky luminous flame. In order to cause gasoline to burn at all it is necessary that it be supplied with air, or with oxygen, and inflammable as it is considered to be, the most effective means of stopping a conflagration of gasoline is to shut off the supply of air or of oxygen. When gasoline takes fire it unites with the oxygen of the air and its carbon is thus burned to CO₂, and its hydrogen is united with the oxygen to form water, the two end products of the combustion of gasoline, carbon dioxide and water. When alcohol burns, while it also draws upon the supply of oxygen it does not do so to the extent that gasoline does. Alcohol will burn with a non-luminous flame which shows that it has a considerable quantity of oxygen within itself which unites with the carbon contained in it, forming carbon dioxide gas and also with the hydrogen, forming water.

Alcohol is Produced from Starch and Sugar.

Alcohol is a feasible fuel but a greater incentive than exists at the present time must be given before it can take the place of gasoline even at anywhere near the present prices. Alcohol is a product of fermentation. It is produced indirectly from starch and sugar; first from sugar and farther back from starch. One very abundant source of alcohol existing in the old country is potato starch. In that country, particularly in Germany, where an abundance of potatoes have been grown, we understand alcohol is a very great commodity for industrial purposes, including fuel. In our own country, however, with potatoes for food purposes at 50 cents to \$1.00 per bushel, it is apparent that little progress will be made toward turning these standard articles of food into alcohol unless the waste products which have a definite sugar or alcoholic value can be utilized for this purpose.

A Commission of Scientists Needed.

What is needed in this country at the present time on the fuel supply to really solve industrially for the people of this country the fuel problem, which is certainly getting to assume mammoth proportions, is that Congress should authorize the appointment of a competent, scientific commission to investigate the reasons for the prevailing high prices of gasoline, and to suggest remedies. This would involve an investigation of the possibilities of alcohol as a fuel and for other industrial purposes, and the conditions under which the production and manufacture of alcohol can be made profitable and its use economical, and the introduction of other substitute fuels, such as kerosene and the lighter fractions of crude oil, and the possibility of their conversion into oils of the gasoline type.

The Fuel Problem is a National Non-Partisan Problem.

These questions cannot be solved for the people by debate on the floor of Congress. It is absurd to assume that Congressmen and Senators can place themselves sufficiently in touch with the scientific phases of these subjects to legislate intelligently from their own information alone. A commission of experts to advise Congress is needed, and needed at once, if there would be conserved for the people the enormous fuel supply which this country is producing and which it is capable of producing in the way of alcohol, etc.



K HAND POWER Stump Puller

Land clearing an easy, one-man job—big stumps pulled clean with this wonderful machine.

Works on any land. Operated by hand! No horses; no digging. Made of forged Krupp steel—guaranteed. Adopted and used by U.S. Government officials and many states. Send for FREE illustrated book on Land Clearing and special offer.

Drop a postal to **W. J. FITZPATRICK** Box 4 182 Fifth Street San Francisco, Calif.

ACTUAL PHOTOGRAPH

Make Your Own Drain Tile

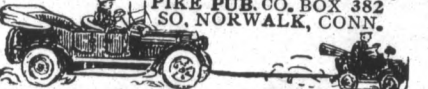
THE FARMERS' CEMENT TILE MACHINE

Makes tile 3 to 8 inches in diam., 12 1/4 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.

FORD JOKE BOOK

All the latest and best funny jokes, and stories on the FORD automobile. Hundreds of them and all good ones. Also JITNEY Jokes, Moving Picture, and Stage jokes. Laugh till you shake. A neat colored covered book by mail for only **TEN CENTS.** **PIKE PUBLISHING CO., BOX 382** SO. NORWALK, CONN.



FARMERS HANDY WAGON

Low steel wheels, wide tires, make loading and handling easier. We furnish Steel Wheels to fit any axle, to carry any load. Plain or grooved tire. Catalogue sent free.


EMPIRE MFG. CO., 389 Quincy, Ill.



Save 20% on Tires

You're paying more than you ought to pay for tires. Save 20%. Buy Riverside Tires. **5,000 Miles Guaranteed** if you use Ford sizes. 4,000 miles all others. Send for free automobile book and get information on how to save money on all automobile accessories. Write for this book today—no house most convenient.

Montgomery Ward & Co. Dept. C110 New York, Chicago, Kansas City, Ft. Worth, Portland



SWEET CLOVER

BIGGEST MONEY-MAKER KNOWN—INVESTIGATE

The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to start, grows everywhere, on all soils. Don't delay writing for our Big 100-page free catalog and circular giving full particulars. We can save you money on best tested, guaranteed, scarified seed. Sample Free. Write today. **A. A. BERRY SEED CO., BOX 931 CLARINDA, IOWA**

CLOVER AT WHOLESALE

prices. We save you money. Buy now before advance. Crop shortest known. We expect higher prices. Don't buy Field Seeds of any kind until you see our samples and prices. We specialize on high quality, tested Clover, Timothy, Alfalfa, Sweet Clover and Alsike; guaranteed the best, sold subject to your approval and government test. Write today for samples and special prices and big Profit-Sharing Seed Guide. **AMERICAN MUTUAL SEED CO., Dept. 131 43rd and Roby St., Chicago, Illinois.**

SCOTT'S FIELD SEEDS

Wet weather damaged nearly all seeds. Most are full of blasted grains and weeds, Buckhorn, Thistle, and Dock. Ours are not, and are far the cheapest to sow. Scarcity of good seed makes early buying advisable. Samples and instructions "How to Know Good Seed" Free. Write today. **O. E. SCOTT & SONS CO., 36 Main St., Marysville, O.**

Phosphorus at 1/2 the Cost

in other forms can be had in

Daybreak Finely Ground Rock Phosphate

By using it at a cost of \$1.00 per acre per year you supply more Phosphorus than the crops use each year and permanently enrich your soil.

Rock Phosphate Pays

Write us for the Book of Proof, prices and particulars.

FEDERAL CHEMICAL CO.
Ground Rock Department
12 Clark Street Columbia, Tenn.

BOWSER FEED MILLS

GROW HEALTHY STOCK

Crush ear corn (with or without shucks) and grind all kinds of small grain. Handy to operate—**lightest running.** 10 sizes: 2 to 25 h. p., capacity 6 to 200 bushels. Conical shape Grinders. Different from all others. Also make Sweep Grinders.

Write for Catalog and folder about the value of different feeds and manures.

D. N. F. BOWSER CO.
South Bend, Ind.



30 DAYS FREE TRIAL

and freight prepaid on the new 1916 "RANGER" bicycle. Write at once for our big catalog and special offer. **Marvelous improvements.** Extraordinary values in our 1916 price offer. You cannot afford to buy without getting our latest propositions. Boys, be a "Rider Agent" and make big money taking orders for bicycles and supplies. Get our liberal terms on a sample "RANGER" to introduce. Tires, equipment, sundries and everything in the bicycle line half usual prices. A few second-hand bicycles \$3.00 to \$8.00, to clear.

MEAD CYCLE CO., DEPT. S-77 CHICAGO

Government Farmers Wanted. \$50 to \$125 monthly. Free Living Quarters. Write, OZMENT, 17 F. St. Louis.



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. Hamline, 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."

YEARLY PROGRAMS.

At this season of the year many local Clubs should have prepared their printed programs for the current Club year. One of the first of these has just been received by the editor of this department, and will be reviewed in an early issue. Copies of the yearly programs of other local Clubs will be welcomed for similar use. Let the other Clubs know what you are doing in this line by forwarding a copy at an early date.

CLUB DISCUSSIONS.

Will Work for County Agent.—The February meeting of the Arbor Farmers' Club was held at the pleasant home of Mr. and Mrs. Lewis Nixon. After a social hour and dinner the meeting was called to order by President Chester Martin. The Arbor orchestra rendered several selections during the program. Rev. Parmand gave the invocation. Members responded to roll call by naming some beautiful place they had visited. Mrs. Jacob Hagen gave a fine paper on "Health and Happiness." She said in part: "Happiness is not the result of luck, but rather of one's own thoughts. Love others and others will love you. Encourage good and overcome fear and weakness and you will win the esteem of your fellowmen." Louis Haas read a very interesting article on the farm tractor. He favored the tractor rather than the horse. The president then introduced Mr. Underdown, superintendent of the Huron Farms Co., who gave us a talk on the Huron Farms. Mr. Underdown also said that he had been requested to ask the Arbor Farmers' Club to appoint a committee of three who were to attend a county meeting of delegates to see what could be done towards a county agent for Washtenaw county. The president appointed C. Koch, W. S. Bilbie and P. L. Townsend. The Club decided to buy singing books. The meeting closed with the singing of "America." The March meeting will be held at "Clover Blossom Dairy Farm," with Mr. and Mrs. H. A. Staebler.—Mrs. Ida B. Haas, Cor. Sec.

Discuss Taxation.—The Wise Farmers' Club met with Mr. and Mrs. J. H. Wilson in Clare for the January meeting, with a large attendance. After a fine dinner, the Club was called to order by President Jennings. Hon. D. E. Alward, of Lansing, being present, he was called on to talk a few minutes on taxation before his train left. He stated that the state tax did not cut any figure in making the taxes right, but it was the township and county tax. But Mr. Alward would have a hard time convincing the average farmer that the state tax does not cut quite a figure in taxation. All one has to do is to look at his tax receipt of five or six years ago and look at the receipt that he gets this winter. The Clare Orchestra dispersed some fine music. Rev. Large offered prayer. J. H. Wilson gave us a warm welcome for himself and family. J. H. Seeley responded and told Mr. and Mrs. Wilson that in welcoming the Club they welcomed the oldest Farmers' organization in the United States today, as the first Farmers' Club was organized in the township of Laurens, Otsego county, New York, in 1806. The question, "What effect will the war have on the American farmer?" was opened by P. M. Loomis, who gave a very good talk, followed by N. Elden and Rev. Large, who thought it would have a bad effect. Mrs. J. Duncan read a paper on "How to Benefit the Club." A vote of thanks was extended to the host and hostess for their hospitality.

Grange.

Our Motto:—"The farmer is of more consequence than the farm, and should be first improved."

KENT POMONA MEETING.

Kent Pomona Grange met with Sparta and Algoma Granges at Sparta, on Thursday, January 20. The forenoon meeting was a closed session. The morning session, at which there were 71 members, was given over to Pomona Master T. H. McNaughton, who secured a report of Grange work from the reports given by the subordinate Granges.

The afternoon meeting was open to all, there being a much larger attendance than in the forenoon. Mr. McNaughton also had charge of this meeting. He announced that the State Grange would furnish a man free of charge to help any Grange organize a co-operative creamery where such was wanted. All communities having a Grange and wishing to form such a company will profit by this as the State Grange sends out competent men only.

The budget system of taxes and national preparedness for war were two important subjects discussed. The system was explained and two members of the Legislature present gave very able talks on this subject. Senator H. E. Powell, of Ionia, told of the present system, and stated that he was in favor of the budget system. He said in part, that as long as the salaries of the state officers were being raised, as long as new commissions were being appointed, and as long as the state institutions were increasing and demanding more money, so long would we continue to pay high taxes.

Mr. McNaughton told of the opposition in regard to preparedness, taken by the National and State Granges. He said that we should look at the subject in a sane way and help do away with all unnecessary preparedness. This subject was discussed, with the result that resolutions were adopted sustaining the action of the National and State Granges.

A chorus from the Sparta school helped to entertain the visitors. They showed good training and credit is due Miss DeOme, their teacher. In the evening Miss DeOme favored the Grange with two vocal solos, one of which the words were written by the State Grange Lecturer.

The fifth degree session was called at 6:30 p. m., at which time ten candidates were shown into the mysteries of the degree of Pomona. After this session the grangers present and their friends listened to the report of the State Grange. The Sparta high school orchestra favored the Grange with a selection, and other music was furnished.

Hon. H. E. Powell, of Ionia, gave the principal talk of the day, making a plea for a single standard of morality. He said in part: "In the present European conflict the plains of Mesopotamia is a battlefield and a wireless relay station is located on Mt. Sinai. These conditions would not exist if we had a single standard of morality. If an individual took lands it would be a great crime with heavy penalties, but in the case of a nation it is for the glory of the country. When this teaching is done away with war will cease. It is a Grange duty to educate for a single standard of morality rather than for a glory of conquest, and thus contribute to betterment of its members.

Mr. Powell then spoke of the mission of the Grange. He said, "The Grange has three missions to perform for its members—financial, educational and social. The financial mission is the smallest, but more should be done for co-operation. The producer gets only 40 per cent of what the consumer pays. It should be that the producer would get some more than 40 per cent and the consumer should pay less. Education is most important for the schools of the state are taking more than half of the appropriations, and are only teaching people to know things when they should teach how to do things. The social mission is very important and should be more thought of. After education, care for the insane is the second item of expense, there being paid \$1,752,283.48 every two years. Also the ratio of insanity is growing faster than the population. The superintendents of the state asylums tell us that liquor is the greatest cause of insanity. Thus if society would eliminate the saloon, citizenship would be bettered and taxes would be less. Prohibition states are good examples of this." Mr. Powell's speech was educational to all as he told the plain facts as they are and suggested remedies in many cases.

The Most in Building Materials Your Money Can Buy



"You'll remember this brand"

—the most in *lasting qualities*, because of our business policy and special process of manufacture.
 —the most in *practicability and variety of product*. Years of experience, a great manufacturing plant and unlimited financial resources make this possible.
 —the most in *service*. An enormous stock and an efficient organization assure prompt deliveries.
 This is what you get when you buy

Globe

METAL PRODUCTS

Roofings, Siding, Cluster Shingles, Silos, Garages, Culverts, Rat-Proof Corn Crib and other interior and exterior uses

For 35 years we have been operating our own Steel Plant, Rolling Mills, Galvanizing Works and Roofing Factories.

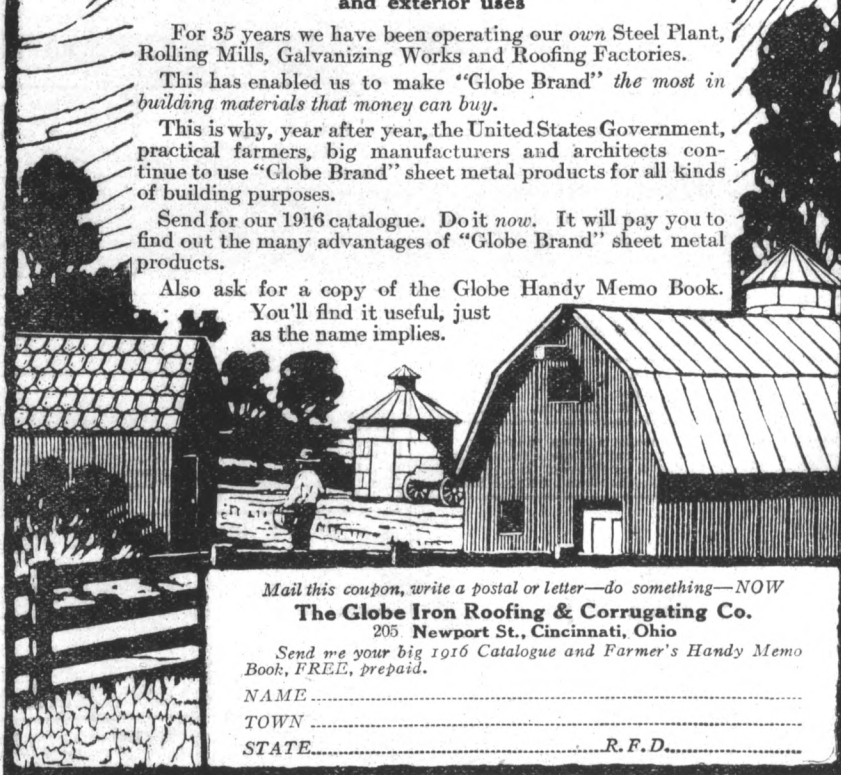
This has enabled us to make "Globe Brand" the most in building materials that money can buy.

This is why, year after year, the United States Government, practical farmers, big manufacturers and architects continue to use "Globe Brand" sheet metal products for all kinds of building purposes.

Send for our 1916 catalogue. Do it now. It will pay you to find out the many advantages of "Globe Brand" sheet metal products.

Also ask for a copy of the Globe Handy Memo Book.

You'll find it useful, just as the name implies.



Mail this coupon, write a postal or letter—do something—NOW

The Globe Iron Roofing & Corrugating Co.
 205 Newport St., Cincinnati, Ohio

Send me your big 1916 Catalogue and Farmer's Handy Memo Book, FREE, prepaid.

NAME

TOWN

STATE R. F. D.

Plenty Of Water For Your Dairy

Supply an abundance of fresh water for your dairy and milk house. More milk and healthier stock. Makes the dairy pay. Our experts will help you select the right pump from among our 300 styles. All rigidly tested and guaranteed by the largest manufacturer of pumps in the world. Backed by 65 years' pump-making experience. They are strong, durable and reliable.

Write for this Book.

GOULDS PUMPS

FOR EVERY SERVICE
 will furnish you plenty of water under pressure for fire protection. Get our freebook, "Water Supply for the Country Home." Plan now for sanitary plumbing in bathroom, kitchen and laundry. Write today. Address Dept. M.

The Goulds Mfg. Co.

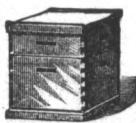
Main Office and Works:
 Seneca Falls, N. Y.

Branches:
 Chicago Philadelphia
 Boston New York
 Pittsburgh
 Houston
 Atlanta



MR. FRUIT GROWER MR. FARMER

KEEP BEES



Your orchards will produce more fancy fruit by so doing. Your berry crop will be greatly benefited. 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. Beeswax wanted.

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.

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.

2 Yr. Apple Trees, .6 to 7 ft. \$12 per 100
 Thousands of peach, pear, plum, cherry and quince and all small fruits at wholesale prices. Catalog free. Jno. W. Pinn's Wholesale Nurseries, Dansville, N. Y.

SEED OATS: Alexander. Awarded Gold Medal for largest yield in pedigreed Oat Contest for Mich. First premium for quality. Potatoes: Late Petoskey, Blight resisting, heavy yielding. Wallace Bros., Bay Shore, Mich.

Veterinary.

CONDUCTED BY W. C. FAIR, V. S.

Paralysis.—My four-year-old cow is down and unable to get up, but she eats and drinks as well as usual so far as I can tell. Her fore parts are all right. She is due to freshen some time next month. Mrs. L. A. T., Petoskey, Mich.—Rub her back with mustard and water every day or two; if her bowels are not open give her 1 lb. of epsom salts as a cathartic; also give her 1 dr. of fluid extract of nux vomica and 1 dr. potassium iodide at a dose in a pint of water as a drench three times a day. Try and help her to get up.

Warts.—My 12-year-old mare has two hard lumps in mouth, one in front of grinders, the other on upper lip, each about the size of a hickory nut. M. C., Shepherd, Mich.—Have bunches cut out. Dissolve 1 oz. borax in a pint of water and apply to sores twice a day.

Heaves.—My six-year-old horse has heaves, but not the common kind, as he does not have as much motion in flank as usual. F. C., Osceola County, Mich.—Feed no clover or musty, dusty badly cured fodder. Give him 1 dr. fluid extract lobelia, 1 dr. fluid extract nux vomica and 1/2 oz. of Fowler's solution at a dose in damp feed three times a day. Careful feeding and avoiding feeding of much bulky dry food, will help him. You can safely try any of the commercial heave remedies that are regularly advertised in this paper.

Chronic Cough.—I have a horse that has had a dry hacking cough for the past three months and I am somewhat alarmed about him having heaves. H. A. H., Sebawaing, Mich.—Rub throat with one part turpentine and three parts camphorated oil once daily. Give 1/2 oz. powdered licorice, 2 drs. ginger and 1/4 pt. black molasses at a dose in feed two or three times a day.

Injured Sow.—My Poland China sow passes some blood with urine, caused perhaps by an injury, but she is in good health. G. W. B., Hastings, Mich.—She is not in need of any treatment and will soon be all right.

Contagious Abortion.—Four of my cows have lost their calves during the past six months and nearly all these calves came six or eight weeks before time and were dead. Two of them lost their calves on grass in mid-summer. I feed clover hay, silage and oat straw, and I would like to know if the feed caused miscarriage. W. G., Palms, Mich.—I am inclined to believe that your cows suffer from contagious abortion and if they are now in calf they may carry their calves full period, especially if they are aged cows. Cleanliness and thorough disinfection of your stables, giving each cow 30 drops of carbolic acid well diluted in water, and mixed with feed daily for ten days, each month for three months, might help them. Any of them that are not in calf and has a vaginal discharge will be benefited by injecting them daily with the following tepid lotion, made by dissolving 1 dr. permanganate of potash in three quarts of clean tepid water.

Indigestion.—I have a heifer that is out of condition, very thin and not thriving and our local Vet. asks \$10 to treat her. F. S., Mayfield, Mich.—In my practice I am very often called to prescribe a remedy that will fatten thin, hide-bound and emaciated cows and upon investigation I invariably find the stable filthy, badly ventilated and the food supply either of poor quality or non-nutritious or else they are stinted in food allowance. Poorly fed cattle are too often turned out of doors and exposed to too much cold and stormy weather for them to thrive or lay on flesh. Give your cow a tablespoonful of ground ginger, a tablespoonful of cooking soda and a tablespoonful of ground gentian at a dose in ground grain three times a day. Keep her warm, well bedded and in the stable.

Calf Has Sore Foot.—I have a calf three weeks old whose bowels and kidneys do not move properly; now his left foot or pastern is swollen, causing him to drag this leg and I have thought he was a little tender in flank. He remains down most of the time, but has a fairly good appetite. D. T. P., Webberville, Mich.—Paint swelling with equal parts tincture iodine and spirits of camphor every day or two. Give him 10 grs. of acetate of potash and 1 oz. of olive oil two or three times a day.

Sore Throat.—I have a cow that came fresh two weeks ago. Has lost considerable flesh since, but drinks as if throat was sore. H. H., Ravenna, Mich.—Apply one part tincture iodine and two parts spirits of camphor to

throat every day or two. Give her a teaspoonful of salt, a tablespoonful of cooking soda and a tablespoonful of ground gentian at a dose in feed three times a day.

Garget.—I have a cow that freshened June 15, 1915, and soon began giving stringy milk, with some blood from right hind quarter. Local Vet. treated her, but quarter went dry. She is to freshen soon; can I expect to redeem that quarter? Not long ago her four-year-old heifer freshened and the same quarter of her bag went wrong. B. B. C., Ithaca, Mich.—In my practice I have sometimes succeeded in opening up blocked quarters with air pressure, but invariably it is unsuccessful in chronic cases. Gentle hand-rubbing, using some belladonna ointment will perhaps do some good.

Loss of Appetite.—Chickens Eat Eggs.—I have some cows that have not a very good appetite. They are fed good corn fodder, clover hay and corn silage. I would also like to know what can be done to prevent chickens from eating their eggs. J. J., Berrien Springs, Mich.—Mix together equal parts of cooking soda, ground ginger ground gentian and powdered charcoal and give each cow two tablespoonfuls at a dose in feed two or three times a day. To guard against the formation of the egg-eating habit, fowls should be fed plenty of lime, oyster shell, bone or similar substances to insure a firm shell upon the egg; furthermore, if you know the "egg-eater," better, cut her head off. This will prevent her educating a class.

Yeast Treatment.—Will you please publish a yeast treatment for cows? Several years ago I clipped formula from the Michigan Farmer, but have mislaid it. L. F., Ithaca, Mich.—The yeast treatment is effective in curing barrenness in cows and mares, when the disorder is due to an acid condition of the genital tract. The solution is made as follows: Put two heaping teaspoonfuls of yeast in a pint of boiling water; set the solution near the stove and maintain it at a temperature of about 70 degrees for five hours. Add three pints of boiled water and keep it warm (house temperature) for another five hours, then flush the parts with warm water first, then inject the yeast. The animal should be mated from two to eight hours later.

Feeding too Much Salt.—What effect would refuse salt, or the salt which is used to sow on land, have on dairy cows, if fed in large quantities, and how would it affect the offspring of cows? E. A., Walled Lake, Mich.—Feeding cattle too much salt creates an abnormal thirst, irritates and inflames mucus membrane of stomach and bowels, retards digestion, destroys the appetite and usually purges the animal; besides, it has a tendency to abort or dwarf foetus.

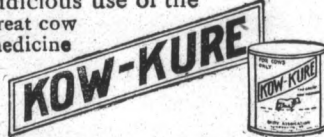
Stocking.—The hind legs of my horses are inclined to stock when they are not working, or not exercised. H. S., Brant, Mich.—Every horse should have exercise every day, unless they are sick or lame. If this rule was followed farmers would meet with fewer losses and their stock would keep nearer sound. Mix together equal parts of powdered nitrate of potash. Cooking soda, powdered charcoal and ground gentian—give a tablespoonful at a dose in feed once a day.

Breeding Questions.—Is it advisable to breed a filly to her sire? Our local breeders tell me this is the proper way to obtain the best colts. To what extent are a majority of the imported stock horses inbred? What is line breeding? R. H. N., Weidman, Mich.—Unless both the filly and her sire are unusually rugged and well developed and perfectly sound, I do not believe it the best way to breed. I have known of so many disappointments that I speak from experience. Of course, you understand a great deal can be said both for and against such close breeding. The results are sure to be either fairly satisfactory or highly unsatisfactory. The majority of imported stock horses are not closely inbred. A typical line-bred animal may be the result of a cross between a filly and colt out of the same sire, but with different dams. If you carry back the pedigree of a truly inbred animal for more than three generations, you will generally find that almost the entire pedigree rests in a single pair of ancestors, and line breeding is supposed to have most of the advantages of inbreeding without being dangerous. Line breeding provides for the introduction of some outside blood, while at the same time a certain strain of desirable ancestors is being constantly concentrated. I have always thought that extreme inbreeding is dangerous and as a rule line breeding is to be preferred. The idea in both line breeding and inbreeding is to increase the proportion of a certain desirable blood strain, but in line breeding the animals are not so closely related as in inbreeding. Perhaps many more words should be used to make this statement plain enough to be well understood.



"I Thought She Would Never Amount to Anything"

Many cow owners all over the country know what it is to see a cow that they were about ready to sell to the butcher become one of their best producers through a judicious use of the great cow medicine



There is nothing mysterious about Kow-Kure; it is simply a medicine for cows that stimulates and builds up the vital organs and makes them perform properly. It has been found especially effective for the prevention and cure of such diseases as Abortion, Barrenness, Milk Fever, Scouring, Lost Appetite, Bunches, Retained Afterbirth.

GET THIS FREE BOOK

When a cow is sick, first aid is most valuable, and to know just what to do may save the life of a valuable animal. Our free treatise, "The Home Cow Doctor," has been very carefully prepared and ought to be in every farmer's library. Write us today for your copy.

Kow-Kure is sold by feed dealers and druggists in 50c and \$1.00 packages.

DAIRY ASSOCIATION CO.
Lyndonville, Vt.



HOGS

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.

POLAND CHINAS

From our thousand pound Grand Champion Boar and Big Stretchy Sows of best breeding. Spring Boars at a bargain. Bred Gilts and Brood Sows. Hillcrest Farm, Kalamazoo, Mich.

POLAND CHINA gilts bred for March and April farrow. Fall pigs, satisfaction guaranteed. G. W. HOLTON, Kalamazoo, Michigan.

POLAND CHINAS of the big type, Spring Boars, Gilts bred for April 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. April farrow. Sired by Big Des Moines, 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, Farms, Mich.

Big Type Boars all sold. Have several good Gilts bred to Smooth Jumbo, Jr. Top Boar of J. D. Collin Sale. Priced right to go quick. A. D. Gregory, Ionia, 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. Both sex and all ages at bargain prices. Also, B. P. Rock Cockerels. ROBERT NEVE, Pierson, Michigan.

POLAND CHINAS—Big and medium type. Gilts bred to big type boars for April farrow. Fall pigs, either sex. L. W. Barnes & Son, Byron, Michigan.

Big Type P. C. Bred sow sale, Feb. 18th. Write for Catalog. W. J. HAGELSHAW, Augusta, Michigan.

IG type Poland Chinas—Western bred, long bodied Extra large bone, pairs or trios not akin. We have Peter Mow, H. Fesemeyer and Geo. Marshall breeding. 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 Yorkshires Gilts bred for spring farrow. Service boars. Pigs all ages. Prices Reasonable. W. C. COOK, Route No. 1, ADA, MICHIGAN.

Yorkshires Gilts For March & April farrowing For Sale. Waterman & Waterman, Ann Arbor, Mich.

MULEFOOT HOGS. Just a few for sale. C. F. BACON, R. 3, Britton, Michigan.

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.

HAMP SHIRE Swine. The great pasture hog. Select herd headed by a mammoth son of the Great "Look Out." Have a few bred sows and fall pigs for sale. Booking orders for spring pigs in pairs and trios, not akin, at reasonable prices. Geo. E. Starr, Grass Lake, Mich.

SHEEP.

Kope Kon Farms SHROPSHIRE and DUROCS. KINDERHOOK, MICH.

Oxford Down Sheep. no stock for sale at present. M. F. GANSSLEY, Lenton, Michigan.

—Yearling and ram lambs from Champion Leicesters flock of Thumb of Mich. Also select Berkshire swine. Elmhurst Stock Farm, Almont, Mich.

HORSES

DUNHAMS Percherons
For Fifty Years The Best
Send for fine Photographic Catalogue.

Dunhams,
Wayne, Dupage County, Illinois
Percheron Opportunity



70 must be sold to close estate.
Purebred Percheron mares at \$250-\$600.
American bred Stallions \$800-\$1000 few higher. No salesmen need apply, we deal direct and give terms to responsible parties.

A. A. Palmer, Estate
(R.R.) Orleans. (P. O.) Belding, Mich.

FOR SALE

The trotting bred and registered stallion, "THE CONQUEST" 2:09 1/2 pacing and 2:16 trotting, bred by Geo. H. Ketcham of Toledo, O., owner Crescus 2:02, sure foal getter and will drive anywhere gelding will. His record 2:09 1/2, world's record for a 4 year old, over a half mile track when made and held 4 years by him. Overstocked and will sell at a price that he will pay for himself in 30 days in services in any good locality. Is not afraid of autos or street cars. Can be used as a business horse and always has his speed. Address E. M. Starkweather, Northville, Mich.

20 Head of Percheron 20

Stallions and Mares
As good as can be found. Royally bred, some of them by the great \$10,000, Champion Carnot (6666). All recorded in P. S. A. Studbook. If you want good ones come and see me. They will be priced right.
H. A. ROHR & SON, R. D. No. 4, Napoleon, Ohio.

"FOR SALE OR EXCHANGE"

Registered Percheron Stallion. He is a grey, sound and in the Ton class, works well on the farm. He is a Grand Son of the Great Bisique and a great mover. He is gentle and sure, this horse must go on account of fillets. Whitney Bros., Onondaga, Mich.

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.

FOR SALE—Registered Percheron Stallion Mares and Fillies at reasonable prices. Inspection invited. F. L. KING & SON, Charlotte, Mich.

Pair of black Registered Percheron Mares in foal weight 1800 lbs. Price \$650.00. Also some colts. Joseph Parker, Cassopolis, Mich.

For Sale—Black Percheron Stallion, 3 yrs. old, wt. 1750, right eye way. Extra good one, a bargain if taken soon.
Wm. Bird, St. Johns, 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.

FOR SALE

One Pair of Bay Belgian Mares

coming five and six years old, full sisters, blocky built, extra good bone, feet and legs; absolutely sound and well broken. Will weigh 3,000 pounds in good flesh, are in fair condition now. A high class pair of mares in every way. One high class shire mare 6 years old. Sound, weight 1625 pounds, very active. Here is one which will make a great brood and work mare. Has class enough to show at State Fair. One good 6 year old chestnut gelding, weight 1550, sound, active, to go with the shire mare if you want a work team. Address Starkweather Stock Farm, Northville, Mich.

FOR SALE—Registered Chestnut Belgian Stallion, seven years old, sound and sure foal getter. Weight 1800 lb. register No. 4576. Russel Harrison, Millersburg, Mich.

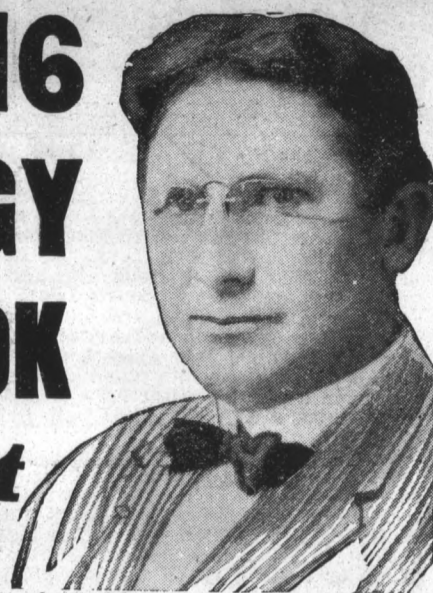
JACKS AND MULES
Raise mules and get rich. 200 head fine large jacks, jennys and mules, 14 to 17 hands high. Large registered jacks and draft stallions cheap now. Will trade for sheep, cattle or horses. Write for prices today. Stock guaranteed. Address KREKLER'S JACK FARM, West Elkton, Ohio.

FOR SALE—2 Belgian Stallions one Imported 10 yrs. Old Bay, weight 2100 lbs. Colts to show. One registered Home bred 3 years old Bay, weight 2200 both outstanding good ones, would consider an exchange for one of them for another equally as good, if interested write. OSCAR WOLF, St. Louis, Michigan.

FREE

My 1916 BUGGY BOOK

Just Out



Just write me a postcard with your name and address and I'll send you my big new 1916 Buggy Book—the greatest vehicle catalog ever printed. Shows 150 stunning new styles and explains my special price-splitting, money-saving offer to 1916 Buggy buyers. Write the postal today.

H. C. Phelps
President

High
Grade
Vehicles
Direct
from the
Maker
to
You

A Wonderful Book for Buggy Buyers

My new Catalog offers you the greatest assortment of high grade buggies ever put out by any factory. It is a big book (7½ x 12½ inches) handsomely printed on fine paper, profusely illustrated and richly colored. Tells how well every part of my famous SPLIT HICKORY BUGGIES are made—shows more styles and bigger bargains than you will find in 20 stores. A penny postal brings this wonderful display right to your own door. No matter when you expect to buy send for my book now, I want you to have a copy of this big book right away. It will make you a better judge of buggies and buggy values. It will convince you that Phelps will not only sell you a better buggy—a genuine Split Hickory—but that I can and will save you \$20 to \$40 by my direct from factory, special price-splitting offers for 1916. Write for this big, free book today.

SPLIT HICKORY

Vehicles are famous the world over for beauty of style, excellence of workmanship, light running, easy riding and long service. Nearly a quarter of a million of them are now rolling over the roads. Everybody knows that the name "SPLIT HICKORY" on a buggy is a mark of the highest quality. For 16 years I have been putting into these vehicles the finest materials and the most expert workmanship I could find. I have made "Split Hickory" a name which my customers are proud to show. My new 1916 selling plan cuts prices more than ever. Gives unequalled bargains in 150 new styles. Saves you \$20 to \$40 on your new rig. My free catalog tells how it is possible to sell you a genuine Split Hickory this year as low as only \$39.25; And remember that on every Split Hickory I give—

30 Days Free Road Test and 2-year Guarantee

You take no chances. I let you pick out the rig you want and drive it 30 days over your own roads—under your own conditions—before you decide. I prove the quality. I prove the value. You test the rig for comfort, light running, style and workmanship from top to tires at my risk. Be sure to write for my big free 1916 Buggy Book before you buy. A postal will bring it free, postpaid. Send today. See for yourself the money you can save, Address

H. C. PHELPS, President

The Ohio Carriage Mfg. Co.
Station 56 Columbus, O.

If you are interested in a new Farm Wagon or a new set of Harness, be sure to ask for my Special Catalogs of Split Hickory Farm Wagons and Ohio Brand Oak Tanned Harness. Both books sent Free and postpaid on request. They will save you money.
—H. C. PHELPS, Pres.



Catalog Shows
150 Other
Styles for
\$39.25
AND UP

Write for FREE
Catalog now—
Today

H. C. PHELPS, President, OHIO CARRIAGE MFG. CO. COLUMBUS, OHIO
Please send me your 1916 Vehicle Catalog. Also Farm Wagon Catalog and Harness Catalog. (Mark X in if either of these Books are wanted.)
Name _____
P. O. _____
State _____
R. F. D. _____