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How To Properly Tap Maple Trees

By VERNE E. VERNET

GRANTED that the atmospheric conditions are favorable, it is one of the easiest matters imaginable to extract sap from a maple tree—merely cut a hole in the tree or cut off a limb and the sap will run out and may be collected. Our forefathers and their Indian neighbors used crude methods such as these and a kind of sugar was their pay. These old-timers, however, had no reason to look to the future welfare of the trees. If the trees died, all was well. There were plenty more left. Today we scheme to a different end. We want the greatest amount of sugar any given tree can produce in a given season and still remain strong and healthy so it will be able to produce in the same vigorous way another season.

It is obvious that sap to a tree is like blood to an animal. Each may lose a portion of its liquid part without serious trouble but neither can lose all and survive. Again it is obvious that the method of extracting this liquid part may be either injurious or insignificant as regards the health of the individual. The happy medium consists of the greatest amount of sugar consistent with continued health of the tree, and with such a matter is concerned the method of tapping.

In various parts of the country there are various prevailing ideas regarding the best side of the tree to tap. Some hold to the notion that the south side is the place, others the east side, some disregard direction and tap under the largest limb or over the largest root and all get more or less sugar. It has been demonstrated that as a rule the south side

of a tree runs the most sap, especially on typical sap days when the sun is bright and warm. There are, however, plenty of exceptions to this rule. On some days the north side may have the greatest flow. Again there are individual variations peculiar to certain trees and under these conditions the side that has the greatest flow can be determined only by experiment. It may be on any side. If but a few trees are being tapped the best side of each tree can be discovered easily and the knowledge put to good use, but if hundreds or possibly a thousand or more trees are to be tapped time will not permit of such slow work. The tests would be too expensive to justify the undertaking. The increased returns would not be large enough. Experimental evidence based on the output of an entire grove of sugar

trees goes to show that the average flow from all the trees is as high as can be reasonably expected if the trees are tapped on the side that has the least shade. Plenty of light is required for a good flow of sap.

The other argument for tapping all the trees on one side is that it makes for speedy collection and diminishes the number of buckets missed by the man collecting the sap.

Tapping Old Scars.

Everybody has observed that scars on human flesh are usually white, even whiter than the surrounding skin. The whiteness is caused by the almost total absence of blood in the substance of the scar. Scars are formed on trees as well as on animals. Sap will not circulate well through a scar on a tree any more than blood circu-

same reason that water is forced out of an artesian well—both are under pressure. The pressure for sap is not a constant quantity. It varies with the time of day. It is greatest in the late morning. About noon it begins to diminish slowly until the middle of the afternoon, and then it drops off rapidly. The reduction of sap pressure is felt first at the top of the tree and later in those parts of the tree closer to the ground. The idea here involved is that the lower the tap hole is made the longer the sap at that level will have sufficient pressure to force it out. In other words, the lower the tap hole the longer will be the run of sap for that day.

Size of the Tap Hole.

The size of the tap hole determines the amount of sap that will pass

een inches in diameter will carry two buckets without danger and a very large tree can carry three or four, especially if the tree shows every sign of perfect health and is vigorous.

Depth of Tap Holes.

The greatest flow of sap is in the wood just beneath the bark of the tree. From this circular layer of sap wood towards the heart the amount of sap diminishes. Obviously it is useless to sink the tap holes too deep into the tree. In fact, to do so is detrimental to the high quality of the sap because the dark coloring matter in the heart wood will contaminate the sap and eventually affect in a bad way the color of the sugar derived from it. A hole one and three-quarters of an inch deep is sufficient. The measurement is made from the inner bark of the tree and not from the outer bark which is chipped off before the hole is made. A conspicuous mark on the bit

one and three-quarter inches from the point will facilitate the correct making of tap holes. Of course, a sharp bit must be used if the greatest flow of sap is desired. A dull bit mashes the wood and clogs up the surrounding parts of the tree that carry the sap. A clean-cut hole will also heal quicker and be less open to infection than one made with a dull instrument.

Placing the Spouts.

The wood that holds the spout in place is at the same time the wood that contains the greatest amount of sap. If this wood is compressed or crowded by having the spout too firmly driven in the sap will not pass so freely through that wood immediately surrounding the spout and consequently not

so much sap will escape. It is necessary for the spout to come in firm contact with the sap wood in order to prevent leakage but beyond that certain degree of firmness the contact becomes a bad feature rather than a good one, and a loss of sap to the man who hammered the spout is sure to follow. Never drive the spout in until it splits the wood, but place it securely enough to hold the weight of a full pail of sap. The less the wood is jammed and bruised by the spout, the better will it be for the tree as regards healing the wound and the more sap will the operator get for his pains.

Pure maple syrup is a much appreciated delicacy on any table and where even a small sugar bush is available it will pay to develop it, hence the pertinence of this elementary advice. (See Add. Illustrations on page 243).



Hanging the Buckets All on One Side Facilitates the Gathering of the Sap.

lates well through a scar on an animal. If this is the case, a scar on a tree is plainly a poor place to make a tap hole. True it is that some sap will run from a place of this kind but not near so much as can be taken from a tap hole made in wood that has never been injured in any way. This matter of scars suggests again the practice of tapping continually on one side of the tree to the exclusion of all other sides. If but one side of the ordinary sized tree is tapped year after year there will be an accumulation of scars on that side of the tree that will, in time, noticeably affect the flow of sap. It will be impossible to avoid the old scar tissue if the tap hole is made on that side and a loss of sap will result if tapping is continued close to those scars.

Sap is forced out of a tree for the

through it. A large hole will permit a large flow. A large hole, however, paves the way for a large scar and thus makes a large place on that particular side of the tree almost useless for future tapping. A large hole is a long time healing and the longer the wound remains open the greater is the chance that infection and subsequent decay will set in and these are matters to guard against in order to insure the continued vigor of the tree. For these reasons it is advisable to make small tap holes and to this end the construction of the common makes of spouts is directed, there being very little variation in the diameter of the various kinds. If the tree can stand the drain, more than one tap hole should be made, as two small holes do not endanger the health of the tree so much as one large hole. A tree eight-

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DETROIT, FEBRUARY 24, 1917

CURRENT COMMENT.

Cow Testing Associations.

In December, 1905, there was organized of Fremont in Newaygo county, a cow testing association which was the first of its kind to be organized in the United States. This was accomplished through the advice and direction of Mr. Helmer Rabild, then an inspector of the State Dairy and Food Department. The plan of operation was patterned after similar organizations in Denmark, Mr. Rabild's native country, with the operation and benefits of which he was familiar. That cow testing association is still in existence, together with nine others in the state, making a total of ten such organizations in Michigan, five of which were organized in 1916. But the beginning made at that time was of large import to the dairy interests of the country. Mr. Rabild was long since employed by the Dairy Division of the United States Department of Agriculture, and he has aided in the direction of the activities of the Division along this line to good purpose.

A directory of cow testing associations in the United States which were active on July 1, 1916, recently compiled by the Dairy Division of the Bureau of Animal Industry, United States Department of Agriculture, showed active cow testing associations in forty states, the total number of organizations being in round numbers 350. Some of our nearby dairy states have shown much more enterprise in this matter of organizing and maintaining cow testing associations than is the case with Michigan, Wisconsin having fifty-one such organizations and New York forty-seven. Ohio has twenty such associations, or just double the number of active organizations of the kind in Michigan. Only Indiana and Illinois of adjacent states, have a less number of these organizations than has Michigan, these states having seven and three respectively.

The recent growth of cow testing work becomes very apparent in looking through this directory, which shows a very large percentage of the associations now in existence having been organized during the past two or three years. With the Dairy Division of the United States Department actively engaged in promoting this organization work in co-operation with the Agricultural Colleges of the various states, there is every reason to believe that the rate of organization will increase rather than diminish in the future.

It is sincerely to be hoped that more of the progressive dairymen of Michigan will become interested in this line of work which will be their greatest aid in building up high-class herds, and

that the state in which the first cow testing association was organized may again take a place at the head of the procession in this important line of organized effort.

Imports of Beans.

Reports have been persistently circulated by the speculative and canning interests with regard to large importations of beans from Manchuria and other sections of the far east, and many Michigan growers have enquired for accurate information on this point. In order to secure the most accurate possible information, the aid of the United States Department of Agriculture was sought. Detailed information on some of the points raised is apparently not available, but sufficient statistical data has been obtained to very definitely settle this argument of bean importations.

Normally, the total imports of beans into the United States is something over one million bushels per annum. This amount raised in 1914 to 1,634,000 bushels, in 1915 it fell below a million bushels for the first time in a five-year period, while in 1916 the total imports of beans into the United States from all sources was 659,259 bushels. Figures for importations from separate countries are not yet available for 1916, for which reason detailed information on this point cannot be given at this time. These figures, however, show conclusively that the misleading reports with regard to prospective importations of beans from the far east were just as untrue as were the reports of exaggerated yields in Michigan which were persistently circulated by these interests long after the status of the bean crop had been quite definitely fixed by official government figures, and by the opinion of legitimate dealers as reflected in market values.

A recent report from Consul Williamson located at Dairen, relative to bean growing in Manchuria, contains the information that the so-called white, or navy bean, is grown in Manchuria, although to a very much less extent now than formerly. Lima beans were also grown quite extensively at one time, but are now seen only occasionally. Of a large number of varieties grown only four are known to any extent in this country, the so-called cranberry or Hokkaido bean, the fava bean, known on our Atlantic coast as the Italian bean, marrow beans and castor beans. While Manchuria grows a large amount of beans, the consul states that the non-edible oil producing bean is planted on a large scale, whereas edible beans are planted by the Chinese farmers for their own use only, as a rule, although an occasional carload of one or another variety will appear at the collecting centers.

The consul states that it is impossible to even give any intelligent estimate of past production of beans, in China, to say nothing of the present or future, so that when the reader hears or reads a report circulated by interested parties to the effect that Chinese beans are being imported in quantities to compete with our own product, they may well discount the statement as probably lacking foundation in fact or positive knowledge.

While the time may come that foreign beans may compete with our domestic product to the disadvantage of our bean growers, it may be predicted with reasonable certainty that that time will not come in the immediate future, notwithstanding predictions of interested speculators.

Promoting Farmers' Organizations.

In some of the letters of criticism relating to county farm bureau work, of which several have been recently received, it is noted that the farmers of any section know from experience how to conduct their farms to the best advantage, and that it is not in the matter of growing crops, but rather in selling them to better

advantage that they need advice and assistance. Apparently it is not well and generally understood that this is one of the lines of activity of the county agents in the counties where county farm bureaus have been organized. As an illustration of this fact let us review the report of county agent activities for a recent month for the purpose of observing what has been done in the field of organization.

In Alpena county "The Ossineke Co-operative Association" was organized on December 11. The purpose of this organization is to enable its members to market their products co-operatively in carlots, and to purchase needed supplies on the co-operative plan. County Agent Woodman was assisted in this work by Mr. Ellsworth, of the Department of Markets. In Branch county, County Agent Nash assisted in the organization of the Branch County Cabbage Growers' Association, the object of which is to secure for the growers satisfactory terms and better prices. In Cheboygan county, County Agent Knopf reports that a national farm loan association is in process of organization, and that work preliminary to the organization of a breeders' association has been carried on by means of farm visits. In Ottawa county, County Agent Hagerman reports the adoption of general plans for the formation of a celery growers' association at a meeting held on December 15. These plans include the employment of representatives at Grand Haven and Chicago to aid in the marketing of their product to better advantage.

In addition to aiding in the organization of these purely co-operative organizations the avowed object of which was the improvement of marketing conditions, the county agents of these and other counties aided at many meetings where milk producers' organizations, breeders' organizations, bean growers' organizations, potato growers' organizations, and similar organizations of farmers were either effected or strengthened. They also attended many meetings of social and other organizations at which various organization topics were discussed by invitation, which work is almost certain to bear profitable fruit later on.

It will thus be seen that the work of county agents along this line is a factor of considerable importance. In this same connection work looking toward the standardization of farm products in a community or a county has an important bearing on this question of marketing, since uniform quality of product is one of the prime essentials in the bettering of marketing conditions. It should not be forgotten that in this work the county agents are able to call upon the extension department of the Agricultural College for such assistance as may be needed in any department of their work. The co-operation of the department of markets above noted is an example of the benefits accruing from this relation.

Without doubt the farmers of these various counties will derive a benefit from this one line of county farm bureau work which will exceed its total cost, yet this is but one of many phases of county farm bureau work.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The submarine campaign started by Germany on February 1 is not only failing to reach the mark set by the central powers, but for ten days the number of victims and the aggregate tonnage has been gradually falling off, notwithstanding that traffic in the danger zone is moving almost as freely as before the campaign was started. How successful the Allies have been in combatting the undersea vessels is a matter of question as no reports on the destruction or capture of these craft are issued.—The British on February 17 were successful in taking German positions on the Ancre front in northern France and later held them against furious counter attacks. On the other hand, German troops suc-

ceeded in driving the French from the trenches near Ripont in the Champagne district and have rendered futile attempts of the French to retake the territory.—Little fighting is in progress on the eastern front; a German attack at Dvinsk was finally frustrated by the activity of Russian forces and in the Carpathian mountains a strong Austro-German work south of Okina has been captured by the Czar's soldiers.—In four small engagements the Italians gained in the Alpine district.—The Swiss federal council proposes to take over the Belgian and French relief work if the American Relief Commission retires from these districts.

Henry P. Fletcher, American Ambassador to Mexico, has arrived at Mexico City.

Many of the poor people of Greece are starving. Famine is said to be the result of the entente blockade which is being continued without relaxation despite compliance with the demands of the entente ultimatum.

Existing sources of revenue have proved to be insufficient to meet the 1917 financial budget for Germany and it is now planned to increase taxes on coal, shipping and passenger traffic.

The Spanish government has determined to remain neutral in the handling of matters growing out of the German submarine campaign.

National.

It is reported that 600 cowboys have crossed into Mexico to pursue Mexicans who killed Americans in the United States last week.

Governor Debaca, of New Mexico, died Sunday of pernicious anemia.

As a result of the destruction of merchant ships during the present war the position of the United States shipping interests among the leading nations has arisen to second place. Great Britain and Norway have been heaviest losers in the tonnage destroyed up to date.

The American Red Cross has issued an appeal for the enrollment of 1,000,000 members to help the nation in case the present crisis with Germany should result in actual hostilities.

At a large meeting held in Chicago last Sunday, resolutions were passed requesting that Americans be warned to keep off ships bound to and from the war zone, and that war be declared by the United States upon no nation until the question is submitted to the people by referendum.

Although there were 65,000,000 more tons of coal mined in the United States in 1916 than during the previous year, the fatalities were the lowest in the past 18 years.

Fire in a paper plant at Watertown, N. Y., caused damage estimated at \$100,000.

FARMERS' WEEK AT M. A. C.

The Michigan Agricultural College has set aside March 5-9 as "Farmers' Week," and a program full of interest to every farmer and farmer's wife has been prepared.

A series of demonstrations will be given by the different departments, in addition to which there will be addresses by ten speakers from other states, as well as by members of the college faculty.

The principal speakers on "Soils and Crops," March 5-6, will be Prof. A. P. Whitson, University of Wisconsin Prof. M. F. Fisher, Purdue University, and E. C. Martindale, of Indiana; Hon. Fred M. Warner, Senator A. T. Roberts, Hon. N. P. Hull, President of State Milk Producers' Association, and Hon. Fred L. Woodworth, State Dairy and Food Commissioner, are on the program for Wednesday, March 7. Prof. J. G. Fuller, of the University of Wisconsin, will speak on "Feeding and Developing Draft Colts," and "The Care of the Swine Herd," on Thursday, March 8. Prof. S. A. Beach, of Iowa Agricultural College, will give two addresses upon different phases of "Orchard Management," on Friday. Special attention will also be given to "Spraying" and "Potato Culture."

The Poultry Department will offer a five-day course in poultry raising, beginning Monday morning, March 5, with W. H. Card, of Connecticut, Prof. H. L. Kempster, of University of Missouri, and Prof. A. G. Phillips, of Purdue University, among the speakers.

The lectures and demonstrations in Home Economics will continue all through the week, with the Women's Congress on Wednesday and Thursday. Prof. Isabel Bevier, of the University of Illinois, will be on the program.

Interesting programs are planned for each evening, with an illustrated "Travel Talk," and a play by the M. A. C. Dramatic Club among the features.

For complete program of exercises, address L. R. Taft, State Supt. Farmers' Institutes, East Lansing, Mich.

Alfalfa Experience

THE worth of alfalfa as a source of protein and a soil builder is being more appreciated by the land owner every year and each season sees more of this valuable crop seeded. It is not, however, as universally grown as it might be or deserves to be, although some soils are particularly adapted to the growing of this legume. This is quite true of most soils in the corn belt states. Of course the soil must be fertile, well drained and limed if a maximum crop is to be grown. The lack of all these conditions means failure in growing alfalfa. Natural drainage exists to a lesser or greater extent on many farms, then possibly the first step to be taken in growing alfalfa, if it can not be afforded to meet all the conditions, fertility is the first requisite and this can be supplied by manure or commercial fertilizer.

The Soil Must be Sweet.

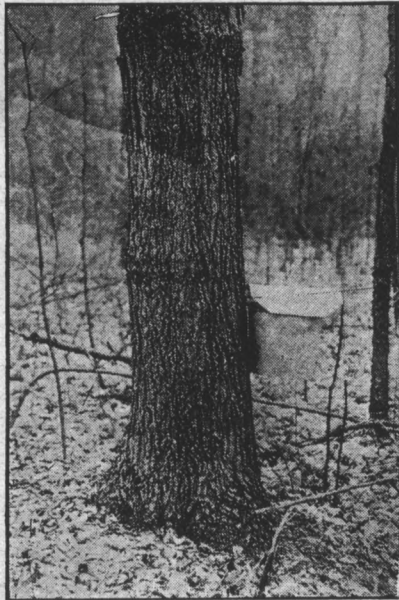
If a farm will not grow ordinary red clover it will be of little avail to try alfalfa as it is a sure indication that the soil is quite acid. The Ohio Experiment Station showed that no matter how much manure or fertilizer or any kind of inoculation of the soil is practiced, alfalfa will not thrive unless lime is applied. Fine ground limestone will need be applied in larger quantities than caustic lime but the effect is the same.

Some insist that alfalfa is to be discouraged because it is a deep-rooted plant, sometimes roots many feet in length and it will seek the water level and consequently grow into the drain tile and close them up. This is an absurdity and by careful observation it has been found wanting in substantiation.

Not everyone perhaps should grow alfalfa. Red clover is a close second to alfalfa and may do better for some. The man who spends time fishing when this perennial should be cut in early summer, or goes picnicing in the fall when the second and third cutting is ready, or who must hire all high-priced and scarce help at haying time, possibly had best not grow alfalfa.

Fertility.

To successfully grow this crop the soil, in addition to other requirements,



Tap at the Proper Height in Unscarred Wood. (See First Page).

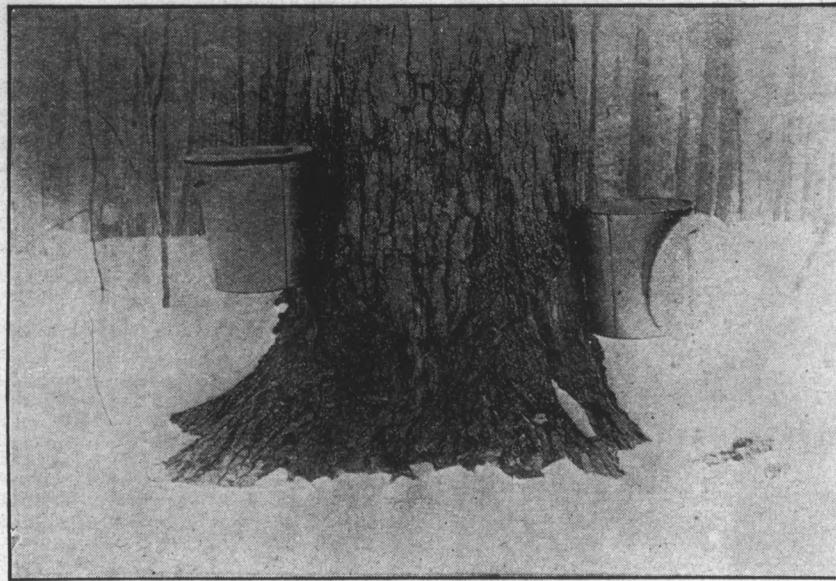
should be quite rich. Nothing, perhaps, will make it more so than stable manure. The mistake should not be made to apply manure just preceding sowing alfalfa or the weed seed in the manure will germinate readily and may be the cause of losing the crop. The manure should be applied early and plowed under. The field ought to be a clean one. A potato field, where good cultivation was pursued while the crop was growing is a good one to sow in alfalfa by surface fitting instead of

plowing. Some have grown alfalfa successfully by plowing early in the spring and keeping the soil well stirred with a harrow or similar implement up to sowing time. This gets an ideal seed bed and kills out all weeds. If after every rain this work were performed the outcome would be successful.

Inoculation.

The soil to be sown in alfalfa should be inoculated for best results but some have grown alfalfa without this inoculation.

When inoculation is desired secure some soil from a field that previously grew alfalfa or sweet clover. This soil contains the necessary nitrogen-gathering bacteria. Apply this inoculated



Two or More Sap Buckets Can be Used on Large Trees. (See First Page).

soil anywhere from one hundred to four hundred pounds per acre. This soil gathered must not be subjected to the bright sunlight as sunlight kills the bacteria. Use judgment in getting soil or an abundance of weed may be secured as well as bacteria. (Many use the so-called glue method, or pure cultures for inoculating the seed with good results.—Eds).

Seeding Methods.

Some grow a nurse crop with alfalfa but experience and observation shows there is little doubt that in most cases it does not pay except in early sowing, April or May, when oats or barley may be found of some advantage.

After due preparations have been made the time of seeding is important. Many have secured best results from midsummer sowing. The seed to be sown must be of the highest grade and as near pure as it can be secured. Better pay a few dollars more for guaranteed seed than to buy inferior seed at a lower price.

The main thing in sowing alfalfa is to sow it evenly and get it well covered. Some use the grain drill with the grass seeding attachment, while others use the common hand grass seeder. The best plan perhaps when using the seeder is to sow a part of the seed one way and the balance the other way. This insures an even stand. By the latter method a spike-tooth harrow or weeder can be used to cover the seed.

What Experience Has Taught.

We have been growing alfalfa for the past twelve years and have learned something new about growing and caring for the crop every year and sometimes success was attained, and again failure was the outcome and some of these experiences may be of value to other intending growers.

The first experience was in growing about four acres. The soil was clay, such as is found in our Miami Valley, and was quite fertile. The ground was plowed in early spring and put in fine tilth and kept so until about June 1, when the seed was sown. No inoculation or fertilizer was used, neither

was lime in any form applied. The alfalfa grew splendidly and some eight cuttings were made of the plot but the stand was gradually taken by blue grass which predominates on the farm and hogs were turned into the field and the following spring the field was plowed up and planted to corn.

Poor Drainage Causes Trouble.

This experience proved so profitable and interesting that more alfalfa was grown. The above field was not under-drained and this led to an early disaster.

The same spring that this original field was plowed under another field that was well under-drained was sown to alfalfa and the seed was sown in June or July. This field was treated to a heavy application of phosphoric acid but no lime or inoculation was used. The alfalfa grew splendidly and

wheat in early spring with a spring-tooth harrow and sow alfalfa, and others use the alfalfa seeder, and all seem to have success.

This spring the first field that we ever sowed to alfalfa and which was mentioned earlier in the article will be sown to alfalfa right on the wheat the same as little red clover. We will sow at the rate of twelve pounds to the acre. The field is now well under-drained, is quite fertile and inoculated. The seed will be sown in February or early March. The object of this is that the seed may become scarified. The freezing and thawing that we will have from time of sowing until warm, growing weather will crack the seeds open and get them in condition to begin growing.

From past experience and observation we believe we can reasonably expect a crop of alfalfa and we encourage farmers to try out a small area of alfalfa on the wheat.

Ohio. I. G. SHELLABARGER.

BANK CO-OPERATES WITH FARMERS.

The accompanying illustration shows the Silver Trophy Cup awarded at the recent second annual corn show of the Farmers' & Merchants' State Bank of Carson City, Mich., for the ten best ears of corn grown within ten miles of its bank. The cup was won by C. E. Bond, of Gratiot county, who was one of the sixty exhibitors. The corn was judged by a corn expert from the M. A. C. The next ten best exhibits were awarded a certificate of excellency signed by the judges. The quality of the exhibit showed a great improvement over the preceding year. Pickett's Yellow Dent was the favorite variety and the bank is urging farmers to plant this corn and standardize the crop so to keep it pure.

The bank is co-operating with the farmers in a campaign for pure seed of all kinds. Last fall a seed-cleaning machine was installed and a large amount of seed wheat, beans, cloverseed, eac., was prepared. Much interest is being taken in the improvement of stock and two breeders' associations have been formed, the Holstein and Shorthorn. A co-operative plan is now being worked out for buying reg-



C. E. Bond, Winner of the Cup.

istered animals and the bank has offered to loan money to all who are interested in building up their herds.

Owing to the shortage of materials and consequent low stocks in many manufacturing plants, it would be wise for every farmer needing new implements or repairs for old ones to place his orders for same at the earliest possible date. Congested transportation is also likely to cause delay, making such action still more imperative.

was the admiration of our neighbors and its owners. The following season one heavy cutting was made and it was excessively wet and the alfalfa began growing immediately. It was the full expectation to cultivate this stand but owing to abnormal weather conditions we were unable to get onto the field and by the time the second cutting was to be made there was a mixture of blue grass, alfalfa and weeds. It was no longer profitable to leave the alfalfa stand and it was plowed under and sown to wheat. A plot adjoining this one was plowed and prepared for alfalfa, and besides having a good seed bed there was an application of sixteen per cent acid phosphate made and 2000 pounds of finely ground limestone high in calcium applied on each acre.

Owing to the wet season and other unfavorable conditions the alfalfa was not sown but the entire area sown to wheat. The last spring little red clover was sown on the wheat. An excellent crop of wheat was harvested last summer but to the eye that grown on the limed area was no better or inferior to that on the other portion of the field. The young clover, however, seems to show some benefit from the lime but it is too early to tell if the application of lime will be of real value to the red clover.

Seeding in Wheat.

Another experience we have had that is valuable to us is that each year when sowing red clover a small quantity of alfalfa is mixed with the red clover seed and in this way the whole farm is becoming inoculated and since the alfalfa sown in this way grew so well, two years we decided to sow pure alfalfa on wheat ground. The alfalfa was sown in April. It grew exceedingly well and two heavy cuttings each year were made from this stand and were it not for the fact this this plot is in a location that interferes with the corn crop this year it would be allowed to stand. If this plot had been cultivated after each cutting no doubt it would have done much better. Several farmers here cultivate the

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Farm Notes

Fitting a Poor Field for Alfalfa.

How about seeding alfalfa on a four-acre piece of very rolling sandy and poor land? Muskmelons and potatoes were grown on it last year. How shall I treat the land to get a catch of alfalfa, or would you advise sowing clover? I haven't much manure for the field.

Van Buren Co. J. H. T.
One should not expect the best success with alfalfa on a poor, thin, sandy field of this kind which is probably deficient in humus and more than likely needs a good heavy application of lime to sweeten it, and make it adapted to the development of the nitrifying bacteria of which alfalfa is the host plant and which are essential to its profitable growth. It is on this type of land that sweet clover is best adapted as a soil renovator and as a preparation for alfalfa, since sweet clover will succeed on a soil which is comparatively deficient in vegetable matter where alfalfa will not.

In either case, the soil should be limed and a good seed bed fitted without plowing, and after the weeds have been thoroughly killed and a firm seed bed provided, the alfalfa or sweet clover seed should be sown without a nurse crop, and either inoculated with a pure culture of the bacteria peculiar to the plant, or with soil from a successful alfalfa or sweet clover field.

Eradicating Canada Thistles.

What, in your opinion, is the most practical method of destroying Canada thistles? Please inform me as to the preparation and use of a salt solution to spray them with. What strength should I make the brine and the best time to apply. Also, whether this would be preferable to the use of dry salt, especially on large areas.

Jackson Co. E. L. M.
The best method of destroying Canada thistles is through cultivation that does not permit them to make any leaf growth above ground for a sufficient period to kill the roots. They can be discouraged by various other methods, and chemical sprays have been advised to destroy them, but the difficulty is that these sprays also destroy other vegetation. Common salt solution will not destroy them unless same is applied in such quantities as to be detrimental to the soil.

One of the best methods of eliminating Canada thistles is to get the field as clean as possible, then prepare and seed to alfalfa. The frequent cutting of this crop at a time before the thistles have bloomed effectually discourages them and they will soon disappear.

Substitute for Sawdust in Packing Ice.

I would like to put up some ice this winter, but can get no sawdust. Is there any substitute?

St. Clair Co. C. S.
Planing mill shavings which can be secured to better advantage than sawdust may be used in packing ice. Where this cannot be obtained, other substitutes are sometimes used. Marsh hay is perhaps the best available substitute. Clover chaff and even straw are sometimes used, but do not give as good results as materials which pack more closely and thus exclude the air more completely from circulation about the ice.

FERTILIZER FOR OATS.

I top-dressed 20 acres of old June grass sod and planted it to corn last year. Corn was a failure, on account of drouth, I thought. I will top-dress the field again late this winter and then sow it to oats. I really would like a hundred bushels of oats per acre or more. I read this article in Michigan Farmer of November 25, by J. N. McBride, in which he advises 250 lbs. of acid phosphate per acre. Would it be better to use a fertilizer containing nitrogen and potash? I would consider the field in good state of fertility.

St. Joseph Co. J. S. W.
A sod that had been top-dressed with stable manure for corn and now top-dressed again for oats, ought not to require any nitrogen in a fertilizer. And again, most soils have sufficient potash for oats or any other cereal.

But all crops and all Michigan soils are benefited by an application of acid phosphate. Some soils need potash; one must experiment and find out to be certain. Now is a poor time to experiment with potash for it is too high-priced for agricultural purposes.

I don't think you can under all present conditions, use any fertilizer to greater advantage than 14 or 16 per cent acid phosphate.

COLON C. LILLIE.

CAN A MAN MAKE A LIVING ON FORTY ACRES?

I am a rural letter carrier on a 30.15 mile route. I own a 40-acre farm, 80 rods from the village, on which I live. Have two horses, two cows, one two-year-old heifer, twenty sheep, three hogs, chickens, etc. Now, on account of the long route I cannot look after my stock, but have to depend on my wife, making a slave of her, and it does not pay to hire. Will it pay me to give up the route, with its pay of \$1200 a year, with fifteen days' vacation with pay, to work the farm and try to make a living off it? Can I do it? Soil is good. There is no debt on the place or stock. I am getting sick of the road; been on the road, or route, about twenty years, fifteen years and six months on rural route. Think thirty miles is too much for a horse in a day; they soon play out. Cost of grain and hay too high to make a decent wage at present.

Kent Co. SUBSCRIBER.
Someone wrote a book entitled, "Ten Acres Enough," and he proves it in this book from his standpoint. With his system of intensive farming, small fruits, poultry, etc., he had more than enough work to do and made more than a living besides enjoying himself immensely. Rev. Detrich made more than a living (he gained fame), on a farm of fifteen acres. He found employment on this little fifteen acre farm for two men the year round, besides what he could do himself. He was a dairyman, pure and simple. If I remember correctly the only income he received was from the sale of milk.

Now F. H. B. wants to know if he can make a living from forty acres. Well, it is simply up to him. The living is there, and a good one, and more besides for the asking. His mind has been on other things too much or he would have discovered this before. It is true that lots of men do not make a decent living off of forty acres, and even a larger farm, but it is because they do not know how, or won't apply themselves, rather than because the living is not there on forty acres of good land.

One of the most dangerous things one can do is to advise a man to change his business or make basic changes without knowing the man, and when one knows the man pretty well it is even dangerous. What one man can and does do, another can't or won't do. That is the trouble.

F. H. B. has been carrying mail too long, it seems to me, to stop suddenly and go to work on the farm. It is evident that he prefers to carry mail in preference to farm work, or he would not have done it so long. I think he is a hero to carry mail for fifteen years. I would prefer to dig ditches for that length of time. But that is the difference.

Now, my advise would be to hold on to the mail route a little longer, but get an automobile. By using an auto he can get back in a few hours in the summer time and work on the farm, or at least oversee the work. The farm horses can thus be used exclusively for farm work during the summer and can be used on the route in the winter if the auto can not be used.

Hire a man by all means. There is plenty of work for him to do, and you, too. You can keep a good herd of cows and you can help milk and do chores and help out on the farm. It will be fun. I used to milk ten cows, do a lot of other chores and teach the village school. The farm work and chores was all the fun I got.

COLON C. LILLIE.

Get My New Concrete Mixer Offer

I want ten men in every county right now to accept my special co-operative offer. It will help you obtain a Sheldon Batch Mixer at little or no cost. Let me tell you about it. You probably need a mixer for concreting on your place—most farmers do. The Sheldon is the ideal mixer for the farm. Light and easily portable, durable, low-priced. You'll find it will prove a mighty good investment. Write for special offer.

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Should the Boy Leave the Farm?

By WARREN J. HOYT

STAY in the country where you will have plenty to eat and lots of air," has been the advice handed out to us farm people for so long that many a lad without much thought on the matter considers himself doomed, and settles back to receive whatever fate may hand him. His position is fairly secure, and no doubt the arrangement is quite Utopian in nature. However, it is not permanent. When suddenly compelled to take charge of the farm, through some unforeseen circumstance, many a boy has failed to make good. The fault usually lies in either the boy or the father, or both. The chances are the boy has been doing his share of the hand work, but practically none of the head work connected with the farm.

"You take the milk to town," says the father, "and I will set the grain and get things ready so you can sow that wheat when you get back." The boy does as he is told, and has learned nothing new. He doesn't know for sure whether he is sowing six pecks to the acre or twice that amount, although it is a matter of considerable importance in the success of the crop.

Things could be explained as they are being done, but in many cases they are not. Farmers are hustlers. To them it seems a waste of time to have anyone idle. They wouldn't hire a man to whom they had to explain many things. If anyone doubts it, let him take a man who can not hook-up a team, out on a farm, and see how long he will stay with some men. Much less would farmers think of allowing their sons to stand around long enough to find out some of the fine points of the business. It is questionable if this is the best way of accomplishing work. The boy's interest in such matter is worth far more than the minutes gained by hurrying them along. Furthermore, there will be more and better work done by the end of the season if the boys are let in on a little of the inside stuff. Boys who are properly interested in their work will not be satisfied otherwise. By merely going through a cycle of motions in doing the chores, not much information can be gained.

There is a limit to specialization, it is being found, and the concentration of the father on the head work and the son on the hand work is not conducive to the development of the boy. The boy who is properly interested will tarry a few seconds when his father says, "John, you water the stock while I mix up the feed," and at least get the principle of the thing. If the father has any objections and can not be made to see the light, the boy may well doubt the feasibility of remaining at home. A young man should get into a work where he can all the time be adding something to his store of knowledge. If farming does not give opportunity for enlargement, there is something the matter with it, or at least with the way it is being conducted.

Is there anything to be learned from the old-fashioned farmer? Many a stockman who has not studied chemistry has the balancing of feeds to perfection. He may know little of carbohydrates and proteins, but he does understand palatability and balances his feeds satisfactorily to the animal, which is after all the essential thing.

In the army, officers are expected to have some knowledge of the office next above them; and the principle might well be adopted on the farm, along with some other good business methods—like the keeping of itemized accounts—which are coming to be employed in rural work. The father should let the traces slacken once in a while, and get away from the farm, leaving the responsibility on his son. It would broaden both. There is, of course, little reason why this can not

be done; but if the conditions mentioned are not remedied, it is one reason why the boy should leave the farm.

BARLEY AS AN EMERGENCY CROP.

Not since the last year of the War of the Rebellion have prices for grain been so high as at the present time. Conditions in 1865 were similar to the conditions at the present time. A prolonged and severe drouth in 1864 cut short the grain crops and prices were high; corn in carlots was \$1.25 a bushel and oats eighty to ninety cents per bushel.

During the last year conditions were unfavorable for sowing oats and planting corn in the spring, and the extreme drouth after June shortened the crops of grain. There was not two-thirds of an average crop of corn gathered and oats yielded proportionately the same. Grains and feeds of all kinds are scarce and high, and farmers must meet their needs for grain as best they can. Any suggestion that will bring relief before the corn crop of 1917 can be matured, ought to be welcomed and considered.

Spring barley comes the nearest to meeting the needs of farmers in the summer time of any of the grains raised. It matures in about 100 days after sowing and is ready for use as soon as ripened and threshed. It makes an excellent feed for all kinds of live stock. A bushel of barley has a feeding value nearly equal to that of corn. It makes an excellent midsummer feed for hogs, horses and dairy cows. If mixed with an equal amount of oats and ground it is an excellent feed for all of the farm animals mentioned. When given to cows or horses it can be fed dry; but for hogs it is better to soak it in a barrel for at least twelve hours. Do not leave it soaking long enough to sour as the acid thus generated is injurious to the hogs.

In order to secure a profitable crop of barley it should be sown on fertile soil, that is high and dry, as early in the spring as the ground can be worked. The ground should be plowed fairly deep, rolled and worked to a fine tilth with disc or spring-tooth harrow. It is well to roll the ground ahead of the drill in order to have the seed sown at a uniform depth.

The amount of seed to sow to the acre is around two bushels. When sown too thickly the stalks are spindling, the heads shortened and the yield of grain diminished.

There are several varieties of barley grown, but the common six-rowed is as good, perhaps, as any when yield of grain is the object sought.

Barley should be cut as soon as most of the heads and stalks have turned white. If left until the straw turns yellow, it crinkles badly, and the heads break off easily, thereby causing the loss of grain.

Many object to raising barley on account of the beards making it disagreeable to handle. When the crop is cut with a binder the bundles can be allowed to remain on the ground over night and shocked in the morning while the dew is on and the beards will be pliable. The barley should be allowed to stand in the shock until cured and sweat in the mow or stack two or three weeks before being threshed.

Wayne Co. N. A. CLAPP.

To get an early and continuous supply of cucumbers sinke a leaky can in the earth close to the plants. Fill this nearly full with manure and fill up occasionally with water. This provides a continuous supply of plant food in a form quickly available. This is also a factor that does much toward promoting early growth.



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New Method for Pruning Young Trees

IS it necessary to "shock" a tree at planting by severe pruning? The Geneva Experiment Station of New York answers "No," and suggests a method of pruning based on actual trial that is an improvement over the common practice.

It is commonly understood when a tree is transplanted that it should be pruned so as to balance the top and the roots. In digging a tree many of the roots are necessarily injured and the tree's capacity for absorbing water is decreased. If the top be left as it was, there will be a greater loss of water than the roots can take in, which will result in the tree's drying out. This drying is harmful as a thoroughly wilted plant is but little better than a dead one. The amount the tree should be pruned depends on the root injury. Ordinarily one-half of the root system is destroyed, so a safe rule is to cut out from one-half to two-thirds of the top.

One should never follow rules slavishly. If the tree has been carefully taken up, only a small amount of the top needs to be cut out, but the above

test with the old system, it has given a much more thrifty tree. It is worth trying.

M. A. COBB.

TROUBLE DEPARTMENT.

Early Crops of Turnips.

I contemplate sowing turnips to be harvested in July and as it is something that has not been tried, I wish to know when to sow the seed so I can harvest about July 10. Will turnips sown early, say in May, do anything, or is it a failure? I figure to raise two crops on same ground, resow as soon as the first crop is harvested.

Allegan Co.

C. J. G.

Turnips can be grown either as a spring or fall crop. If it is to be used as an early crop, the seed should be sown as soon as the land can be prepared in the spring. Roots large enough for table use should be produced in from six to ten weeks under normal conditions.

The chief requisites of successful turnip growing are a cool, short growing season and a moist soil. If the turnip makes slow growth it is likely to be woody and bitter. Quick growth is promoted by having the land rich and moist and in good tilth.

Early Cabbage.

Will you kindly give me some information in regard to raising early cabbage for market? How much will it take for an acre and what kind to plant?

F. W.

There are two ways of getting started in the growing of early cabbage; one is to start the plants in a hot-bed to be transferred to the field as soon as the ground is made ready in the spring, and another is to buy the plants from plant dealers in the south who make a specialty of growing the cabbage plants for sale in the north.

The cabbage plant can stand considerable frost, and therefore may be put out in the field as soon as the ground can be prepared in the spring. For the early crop the plants are put eighteen inches apart in rows twenty-four inches apart, although some growers plant them twenty-four inches apart in rows twenty-four inches apart.

The best varieties for the early market are the Wakefield and the Copenhagen Market. The latter variety is a little later than the Wakefield, but makes a slightly larger and firmer head. If you are going to buy plants, you should figure on at least about 10,000 plants per acre.

The chief essentials of successful cabbage growing are good, rich and moist soil and thorough cultivation. The most satisfactory way to control the cabbage worm is to use plenty of arsenical poisons as a spray until the cabbages are half grown. A very effective spray is Paris green, about ten ounces to fifty gallons, to which resin soap has been added to make the poison adhere better.

If the worms should become serious after the plants are well developed, a way of controlling them is by the use of poisoned bran mash such as is commonly prepared for cutworms. If the plants are attacked shortly before they are ready to be harvested, a spray of hellebore at the rate of one ounce to a gallon of water should be used.

Eradicating Horseradish.

Can you give me any information that will help me to get rid of horseradish that is scattered about in my garden? I have been trying for several years to get rid of it but it is getting worse.

A. P.

Horseradish as a weed is very difficult to control. Various methods have been tried, but none have proven very successful. The use of weed sprays and other poisons to kill the tops are of little value, because the root retains life for a long time and will sprout again.

The only way by which you can rid your garden patch of it is to be vigilant in keeping the tops cut off; as soon as you see a sprout come through the surface of the ground, cut it off.

Methods of Pruning Young Trees.

rule is ordinarily a safe one to follow.

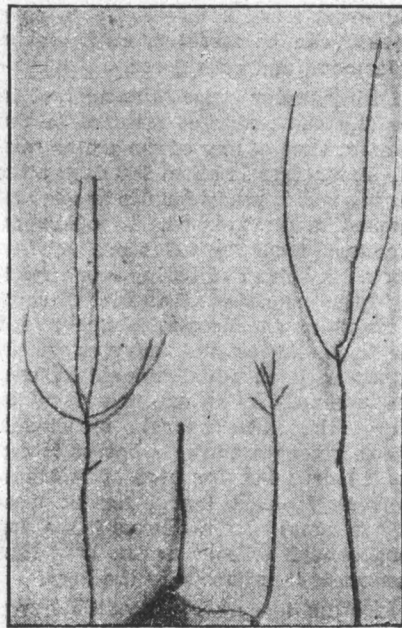
Tree No. 1 to the left of the cut, is the way a young plant comes from the nursery with a good top development.

No. 2 shows a common method of pruning a peach tree by cutting off the entire top. This is often advisable when the tree is headed too high. This method should be avoided with most trees, as it "shocks" the tree; that is new buds must be formed and pushed out from the bare trunk. This takes too much energy and the appearance of the first leaves is delayed too long. It is desirable to have a few leaves formed early as these make the real food for the growing tree. Most people think of the roots as taking up the food from the soil but they do not—they supply products to be transformed by the leaves into real food for the tree. These facts are the basis of the new method.

Tree No. 3 shows the usual way of tree pruning at planting—the cutting off of weak branches, leaving several well placed branches to form the main trunks of the tree and cutting back of these to two and three buds. This is a good practice but these buds are apt to be weak and slow in starting and the treatment is severe.

Tree No. 4 shows the recommended plan of pruning. All weak branches are cut off and several properly distributed branches are left entire. This leaves the strongest buds, which are at the ends of the branches to form their leaves quickly and begin to manufacture plant food for the young tree. This gives the young tree a push for growth that generally follows later.

The writer has practiced this method of pruning for several years, with splendid results and in comparative



The M. A. C. Hort. Show

THE ninth annual show given by the M. A. C. horticultural students on January 26-27, in the Agricultural Building, was evidence of the assertion that the Horticultural Club is one of the most progressive clubs on the campus and that it is keeping pace with the times and that its members are "learning to do by doing."

The purposes of the show are to let the students of the college, and any other visitors, see what work is being done along horticultural lines and to give the students in the horticultural department the experience of staging an exhibition that shall be instructive, well arranged, and self-supporting.

To meet the financial obligations a program is put out and advertisements in this form a part of the income, the rest comes from the sale of apples, a portion of which are kindly donated by prominent growers in the state, and from the store, and a domestic science counter where apple pie and other goodies are sold to the visitors.

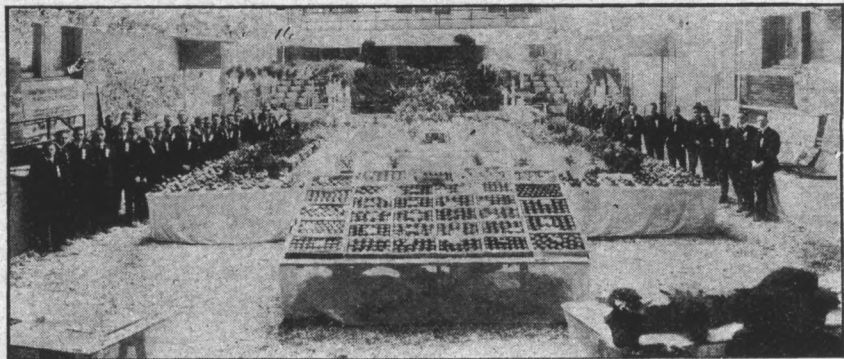
The general plan of the show was

ed by the club. After much scrutiny and critical tasting of samples of these productions the judges, Misses Garvin and Bigelow, gave first place to Miss Bernice Horton, of the class of 1917, of Bath, Mich., whose pie scored 95 out of a possible 100, Miss Dorothy Klein, of the class of nineteen, and from Birmingham, won second with a score of 80, and Miss Dorothy Lillie, of the class of 1917, of Coopersville, won third with another 80 score. The prizes were, first, \$5; second, a box of oranges; third, a box of apples.

Landscape Gardening Exhibit.

The landscape men added much to the attractiveness of the show by the creation of an Italian garden, with its ferns, flowers, and waterfalls bubbling over the rocks. They also had a demonstration of shrubs useful for planting to get good winter effects of color, there was also a model house and its surroundings, as roads, plantings and grades.

A horticultural library, a system of orchard accounting and record blanks for cost of pruning, spraying and the



The Display of Fruit at the Hort. Show was Attractive.

changed somewhat by moving the store and the domestic science counter to one end of the pavilion and the orchard machinery exhibit to the farm mechanics' laboratory. This left the entire center of the floor for tables of apples and as in years before this was by far the largest exhibit of any one kind.

A Variety of Exhibits.

The states of Michigan, Washington, Indiana, Ohio, Wisconsin, Iowa, Minnesota, Nebraska, Massachusetts and New Jersey were represented, besides many county and individual exhibits, so there were over seven hundred plates and approximately forty to fifty varieties on display. The apples as a whole, were of excellent quality, well grown, highly colored and in good condition.

In the awarding of places in the apple exhibit considerable difficulty was encountered due to the fact that there were no classes or regulations regarding the entries. However, the primary purpose of the apple exhibit is to acquaint the students with the different varieties and their peculiar characteristics, and this it surely does. Truly it is an exhibition and not a competition and the growers who have so generously contributed are deserving of a great big "Thank you," for the interest that they have shown.

In the plate exhibit by states, Washington was given first, Massachusetts second, and Ohio third. Michigan was not considered in this contest, due to the vastly larger number of plates on exhibition. In the county display Mason won first, Allegan second, and Shiawassee third, and for the individual exhibits Smith Hawley & Sons first, W. H. Chapman second, and C. B. Cook third.

The fruit exhibits of U. S. and H. B. Crane, of Fennville, E. W. Lincoln, of Greenville, and O. W. Brauman, of Grand Rapids, are worthy of special mention.

Pie Contest.

The apple pie contest among the domestic science students brought out twenty-five entries for the prizes offer-

ed by the club. After much scrutiny and critical tasting of samples of these productions the judges, Misses Garvin and Bigelow, gave first place to Miss Bernice Horton, of the class of 1917, of Bath, Mich., whose pie scored 95 out of a possible 100, Miss Dorothy Klein, of the class of nineteen, and from Birmingham, won second with a score of 80, and Miss Dorothy Lillie, of the class of 1917, of Coopersville, won third with another 80 score. The prizes were, first, \$5; second, a box of oranges; third, a box of apples.

production of orchards gave one an idea of how to get at just what his orchard was doing for him and how he might improve his practices. Standard books on the subject of horticulture and free government publications were shown.

The value of selection and breeding of desirable types of plants and fruits was well shown by actual specimens of variations, parents and the resulting crosses, and personal explanations. A very interesting table was that giving the products of horticulture found on the markets at this season of the year, and the regions where they were grown or produced. Unless one stops to think, we do not realize the variety of fruits and vegetables that are now available nor the distances that they have to be shipped before they reach our tables.

Horticultural Demonstration.

Proper methods of box and barrel packing, the principles of precooling, loading, and refrigeration were illustrated and explained.

Actual specimens of the chief insect and fungous troubles of the orchardist were to be seen, also methods of combating and controlling them were given. Life histories were shown by charts and drawings, this helping to show the proper time to most effectively fight a pest and control it.

The vegetable exhibit consisted of many fine potatoes from the county boys' and girls' clubs, also celery, lettuce, etc., and two new vegetables from the United States Department of Agriculture—namely the dasheen and cheroytes.

As before, the student lectures were continued, this year's program having five numbers on various vital horticultural problems.

Though the horticultural show is a student affair and is put on by the senior and junior classes, it is only with the timely suggestions and the co-operation of Prof. Eustace and the other members of the department that each year's show was made bigger and better than the preceding one.

Allegan Co. E. B. BENSON.



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Community Improvement of Live Stock

By H. C. RATHER

AS one passes through the average agricultural district of this state he cannot help but note the lack of purpose shown in the breeding of the live stock. The writer saw a very forceful example of this while passing through a very promising agricultural region a short time ago. A survey of this locality showed one herd of cattle exhibiting traces of Aberdeen-Angus, Shorthorn, and Holstein blood. The cattle on the next farm were Herefords. Most herds showed no breeding whatever, and where inclination toward one type was evident the number of types was so great that one might have traveled for days in that community and he would have been unable to find a carload of uniform cattle.

The same situation was evident among the other classes of live stock. One horse breeder owned and offered for service sires of three different breeds, while his nearest neighbor held for service an animal of a fourth breed. **These Conditions Are Not Unusual.**

This community is not unusual. It is but a sample of the average Michigan rural community. There is nothing in the live stock situation of that district that will distinguish it or set it off, nothing to attract the stranger, the buyer who is willing to pay high prices for high-class products.

We thus have confronting the average farmer of Michigan a problem which should demand his immediate attention. The solution of that problem is comparatively old and very simple, and yet it is being applied in but few communities. It cannot be worked out by one individual but requires co-operation among all the farmers in any one neighborhood. Its application has proved exceedingly successful.

The means of improving the live stock is a co-operative breeders' association. A sufficient number of farmers should be brought together so that the association will hold at least one hundred and fifty head of breeding cattle. The association is then divided into three parts each part having about

the same number of cattle. The members of the association then agree upon the one breed of cattle that they shall handle. A committee of members, or preferably some expert stock judge, is engaged to go out and purchase three good pure-bred sires as nearly alike as possible. One of these is placed in each of the three groups under the care of a member who is paid by the rest of the association for his extra labor and expense. The sire is then used by the members of that particular group for the improvement of their cattle. At the end of two years the groups exchange sires, and at the end of four years another change is made. When all three groups have had the use of all sires for two years they may be sold, new ones purchased and the system continued.

The advantages of this system are very apparent. In the first place the members of the association are able to retain at their service tried and proven sires for a period of six years at a small investment, whereas were they to get the same results individually they would have to purchase a new sire every two or three years. Tried sires, if they have proven successful, are very expensive and hard to obtain. Young and untried sires are

very uncertain in the results they produce.

Uniformity as an Asset.

The big advantage of this system, however, lies in the fact that the entire community has, in a few years, built up a very high class of cattle all of one breed. If it be a dairy breed, outside buyers desiring carlots of breeding or milking stock will be attracted to the community because they know beforehand that they can get carloads of high class without covering much territory. Packers and shippers will come to the communities handling the beef breeds, for they can soon find a carload or more of high-grade steers for the best markets. All stock will command much higher prices because of the advertising which a large number of cattle of one particular breed owned in one community will give to that community and because of the higher quality of stock and the greater ease with which it can be produced by the buyers.

One needs only to cite the examples of the various prominent live stock breeding counties in England, of the Holstein-Friesian community at Howell, Michigan, and of Waukesha and various other counties in Wisconsin, where some united effort is being made, to know the value of co-operation in the breeding, improving, and marketing of live stock and live stock products.

Give the Brood Sows Good Care

NEVER has there been a time when the care and management of the brood sows demanded more attention than at present. Feeds are scarce and high in price, but there is every indication that pork products will command high prices during the coming year. Every pig farrowed this spring should be saved and given a good start so that by the time this year's corn crop is ready for feeding it will be capable of going into the feedlot and making rapid and economical gains. Feeding high-priced grains is purely a gambling proposition unless one has good vigorous pigs that are capable of making good use of them.

Good care is cheaper than dollar corn, and now is a good time to give the sows good care in abundant measure—and make every possible use of cheap protein concentrates. Clover and alfalfa hay, waste fruits and vegetables, tankage and skim-milk will help out wonderfully and insure stronger and more vigorous pigs at farrowing time.

Then plan to have the houses and farrowing pens comfortable and sanitary so that the pigs will not become diseased and stunted at an early age. Cleanliness is a virtue in the care of new-born pigs. While no more necessary in the case of early farrowed litters than of those farrowed later in the spring it is more difficult to maintain. A few days previous to farrowing time disinfect the floors and bunks with quicklime and sprinkle the side walls with a strong solution of an efficient commercial dip. Then daily, or every other day, clean the pens, remove the litter from the houses and feed yards. At least once a week clean out the old straw in the nests, disinfect the feed troughs and floors and provide clean and dry litter. With cholera eliminated, nine-tenths of pig ailments are due to unsanitary troughs and sleeping places during the period they are nursing the sows.

Feeding Suggestions.

Go slow about feeding the sow heavy rations of heat-producing feeds for a few days after farrowing. Give her plenty of warm water and enough middlings, ground oats and bran to keep her quiet and contented the first day. Alfalfa or clover hay will help to furnish bulk and keep her bowels in good condition for a few days after the farrowing period. The grain ration may be gradually increased after the


second day until sufficient grain and mill feeds are fed to keep the sow and pigs in good condition. As the pigs begin to make greater demands her ration must be increased until she is fed all that she can handle to advantage. To keep a sow supplying milk up to the capacity of the pigs, requires a great skill as feeding a dairy cow for a production record. The skillful feeder must regulate her daily rations to approximate every requirement of the sow and her pigs. He must watch the feed and its effects to prevent scours and see that the pigs get out of the nests and exercise in the runways to prevent them from becoming lazy and overfat, resulting in thumps. The houses should be comfortable, but coldness is preferable to dampness. Proper ventilation will prevent dampness and foul odors from gathering in the houses. Sprinkle the floors with crude oil to prevent dust. Dust is as harmful to young pigs as dampness.

Spray the sow and pigs with crude oil to destroy lice and nits. A small sprayer with a fine nozzle is more effective than dipping for young pigs. Clean water is just as essential as grain feeds and far cheaper. Galvanized water fountains are especially valuable for the water supply. Filthy troughs and mud-holes are prolific sources of disease and ailments among young pigs.

As soon as the pigs will eat by themselves give them access to such feeds as shelled corn, skim-milk and middlings in the alleys and runways. If the sow and pigs are not fed tankage or meat meal mix one part air-slaked lime and three parts steamed bone and put it in a receptacle where they may have access to it at all times. If fed supplemental feeds in the runways they will keep in better condition at weaning time and there will be no interruption in their growth as is the case when pigs are changed suddenly from a ration of sow's milk to one of ordinary farm feeds.

New York. W. MILTON KELLY.

Now and then a sale is made in the Chicago Stock Yards of some fancy selected feeder steers requiring only a short finish, at an especially high price, and not long ago a country buyer had the courage to pay \$9.35 per 100 pounds for a carload of 1118-lb. steers, but they were already good fleshy killers and needed but a short finish that would place them in a decidedly higher class of beef cattle.



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Feeders' Problems

Grains to Use with Corn in Feeding Steers.

I would like to know if there is any feed I can buy to mix with crushed corn to fatten steers on. I have for roughage feed, cornstalks, mammoth clover clippings, alfalfa, hay, bean pods, oat straw and mixed timothy hay. I have to buy grain for them anyway, so would like to know if there is any feed that I can buy that is cheaper than corn at \$2 per cwt.
Jackson Co. SUBSCRIBER.

It is doubtful if there is any available grain at the present time which will be cheaper than corn at \$2 per cwt, for feeding steers, with the available roughage mentioned in this inquiry. The writer is feeding dried beet pulp and cottonseed meal in combination with corn and hominy feed with alfalfa hay for roughage with very good results, but under present conditions these other feeds cannot be purchased at a price which would make their use more economical than corn at the price named.

A Grazing Proposition.

I have 75 acres of cleared land and 500 acres of pasture land. Am thinking of stocking same and would like to have your opinion of which you think would be the best, beef breeds or milk breeds, and what is the best of each breed?
St. Clair Co. G. D. S.

With a large area of unimproved land and only a comparatively small area of cleared land, the pasture area could be better utilized for the production of beef cattle and sheep, or both, than as a dairy proposition, since this course would require a much smaller investment in buildings and equipment which would be more adapted to the size of the cleared farm than would a big dairy establishment which would utilize the pasture land to the same advantage. A comparatively cheap outfit of buildings would serve for the wintering of a good-sized flock of breeding ewes and some beef cows if desired, and the produce of this breeding stock would bring a good price for feeding purposes in the fall if facilities are not at hand for feeding same. This would, in the writer's opinion, be a proper method of operating a proposition of this kind where there is a large area of pasture land as compared to the available cropping area.

If the pastures cannot be stocked to their minimum capacity by this plan, more cattle could be purchased at any time when market conditions favored the investment. Also a portion of the pasture land could be permitted to grow throughout the season and used for late fall and open winter pasture to good advantage, thus reducing the period of yard feeding for the breeding herds.

So far as breeds are concerned, all of the beef breeds of cattle are good, and the owner's fancy may be safely indulged in this respect. In the purchase of breeding ewes for an enterprise of this kind good western ewes would perhaps be preferable, since a uniform flock accustomed to range conditions could be secured from this source only.

A Catch Crop with Rye.

I have a ten-acre field of rye that I am intending to sow back to rye again next fall. What can I sow this spring so I can pasture after the rye is cut? I thought of sowing rape. What time will I have to sow it?
Ottawa Co. J. V.

It is hardly possible to grow a profitable catch crop with rye to produce pasture after harvest. Rape sown with oats will make excellent pasture after the oats are cut, under favorable weather conditions, but the oat crop affords a much better seed bed for rape than it would be possible to prepare in this growing rye, then the two crops have an even start, and there is opportunity for the rape to make considerable development before the oats begin to head, after which the rape will make very little growth until the oat crop is cut.



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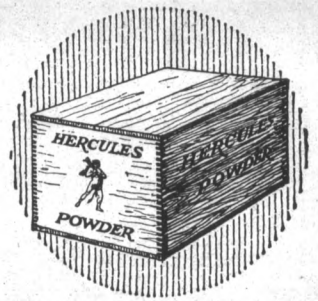
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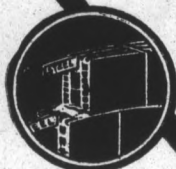


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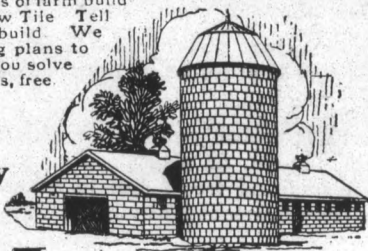
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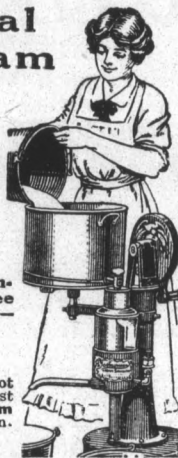
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Feeding Dairy Cows for Vitality

By W. MILTON KELLY

THE failure of cows to breed regularly is becoming more common from year to year, and on many dairy farms is dissipating the profits. This lack of vital power, for such it seems to be, is more prevalent on farms where large quantities of purchased concentrates are fed to the cows than on farms where the cows are fed more farm-grown feeds. Cows that must be bred several times before becoming pregnant seldom freshen at the desired season, lessen the supply of milk when needed, and cause a general upsetting of the dairy farmer's plans. In extreme cases abortion sweeps through the herd and ruins the better cows.

The Milk Producing Feeds.

It is not the intention of the writer to pose as a medical expert, but rather to call attention to the importance of proper feeding to maintain the reproductive powers of dairy cows. It is claimed by many dairy experts that in the case of heavy-milking cows the cause of shy breeding is the fact that so much of their feed goes to make milk that the reproductive organs are improperly nourished, and therefore too weak for maternity. This condition, however, is greatly intensified by improper feeding, so that after all it brings us back to the question of rational feeding. Unfortunately for the dairy farmer, the feeds that have the greatest value in producing an abundant flow of milk are the very feeds that have the lowest value in supplying nourishment for the reproductive organs. Consider the milk-giving value of cottonseed meal, then consider the dairy cows that have fed upon it until they are worthless in the dairy

herd. Other foods have a similar, though not so noticeable an effect. All highly concentrated protein by-product feeds are dangerous unless properly supplemented with other feeds that are valuable in supplying nourishment for the reproductive organs. It is to be regretted that these concentrated protein feeds are so deficient in the elements needed to build up the organs of maternity.

Oats Valuable for Dairy Cows.

On many farms the trouble is not the result of heavy feeding of these protein concentrates, but not feeding enough of any nourishing feed. Such a policy means a loss at both ends and wipes out every possibility of profit. Between these two extremes there is a proper system of feeding dairy cows which provides for an abundance of farm-grown feeds that contain more bulk and less protein than the protein by-products, even though a properly balanced ration is not used. In making up the best rations to insure an abundant yield and a healthy development of the reproductive organs no other grain can take the place of oats. Oats are the best all round feed for dairy cows, and should have a more general use in our rations for dairy cows, even though their use may add slightly to the cost of feeding the herd. The cow cannot turn all the nourishment she derives from the food she gets into milk and still have enough to build up her reproductive organs. We want our cows to breed regularly and must do our share to that end. We must see that our cows have the right kind of feeds to insure their breeding qualities if we are to succeed in the dairy business.

Dairy Problems

A Substitute for Milk for Young Calves.

Wish you would put in your paper some good artificial food to raise the calves on. Sanilac Co. R. P. There is a prepared calf meal on the market that people have found to be very good for young calves in place of skim-milk.

more milk we get up to a certain limit. If you have not been used to feeding grain so liberally I advise you to increase the ration slowly, say add half a pound of grain daily until you get your ration up to the full amount. Watch each cow, if she does not respond to liberal feed don't give her any more.

A Good Ration.

The Minnesota Experiment Station found the best substitute was the greatest combinations of grain they could get. The more the better. Make a gruel out of these grains and then dilute it with warm water. A little experience in feeding will enable one to use about the right amount of water.

I have a herd of ten cows, besides some young cattle. I am feeding the cows ensilage once a day and cornstalks twice a day, all that they will eat. I have corn and oats, which I feed, equal parts. I also have purchased some cottonseed meal which I feed about one pound per cow. How can I get a better balanced ration? I also have a little millet which I can feed in place of cornstalks for a little while. Missaukee Co. N. V.

To be more explicit, wheat bran, ground oats, corn meal, barley meal, oil meal, flaxseed meal, beet pulp, middlings, and all the more you can get. Cook this grain in a kettle, using about five to one of water, that is, if you use one quart of grain use five quarts of water to cook it in. This makes a thin gruel, now thin it by using warm water when fed to calves.

How Much Grain to Feed.

Will you give me the correct proportions for a balanced ration for dairy cows? I have mixed clover and timothy hay, corn silage, cottonseed meal, wheat bran, and ground feed consisting of 50 bushels of oats to 10 of shelled corn. Would you advise feeding one pound of this grain to every three or four pounds of milk produced? Clinton Co. H. H. C.

I think cows ought to have at least one feed a day of good hay, otherwise you have a splendid ration. But I think as your roughage is all corn plant the ration is perhaps a little deficient in protein and I would therefore increase the cottonseed meal to two pounds per day per cow and see if this does not increase the flow of milk. You could also increase the feed of corn and oats until each cow gets one pound of grain to every three or four pounds of milk produced in a day.

I would advise only two pounds of cottonseed meal per day per cow. This meal does not mix well with other feed so I would feed it separately and scatter it on the silage.

Always increase the grain ration slowly, adding half a pound per day, and watch results. If the cows won't pay for the increased ration of grain, then don't feed it. COLON C. LILLIE.

Oats and corn make a splendid ration to feed with cottonseed meal.

MICHIGAN DAIRYMEN MEET.

If you have good dairy cows I think it will pay you to feed one pound of this grain to every three pounds of milk produced. It seems a large ration where one has good cows that produce large quantities of milk, but we must remember it requires food to make milk, and the more liberal we feed the

The annual meeting of the Michigan Dairymen's Association will be held in the Armory, Detroit, March 6-8. Unusual interest will attend this session of the organization, due to the many changes in conditions surrounding the industry. Live questions on production and distribution will receive merited attention. On March 8 the market milk dealers have planned a special session at which they hope to organize a state association.

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MORE ABOUT THE COST OF BUTTER-FAT.

I noticed an article in last week's issue on the cost of butter-fat, by W. F. Taylor, of Oceana county, that will bear some correction.

He has the cost of feed figured at 36c a pound for butter-fat and 25c of this is for 10 pounds of grain at two and a half cents a pound.

Now, if he understands feeding dairy cows, he knows that a cow giving one pound a day of fat does not require 10 pounds a day of grain.

She should be fed as many pounds of grain per day as she gives pounds of fat a week, which would be seven pounds in this case, and then, too, he has that grain figured at two and a half cents a pound, or \$50 a ton. If he pays that for his grain he is an easy mark for some dealer, for we can buy the very best of grain at \$40 a ton, even at present high prices.

Now, then, we have seven pounds of grain at two cents a pound, or 14c a day for grain, instead of 25c as he had it figured, which cuts the cost of that pound of fat 11c and makes it 25c instead of 36c; quite a difference.

We are buying feed for six cows and I know what I am saying is the plain truth and that most dairymen would have gone out of the business long ago if the feed alone cost them anywhere near 36c a pound for butter-fat.

G. W. HAWLEY.

I have been writing for the Michigan Farmer for twelve years and have tried in a general way to be very careful regarding my statements but in this case I am sure that Mr. Hawley's attitude is justified in part at least. A pound of grain a day for every pound of butter-fat the cow produces in a week is doubtless enough in a majority of cases. However, there is no positive rule. Some people feed more and many feed less. While there are different theories upon this subject, one is justified in saying that the relative amounts of grain and roughage which may be fed to a dairy cow with profit have a wide difference in the individual cow. For example, I recall a herd of grade Holsteins which, while they consumed only three pounds of grain per day each, produced a pound of fat. The small allowance of grain was compensated for by increased consumption of roughage. Now, in many instances, such a result would have been simply impossible, but it was possible with these cows because it was being done.

Now about the price of grain. At the time I wrote this article it did look to me as though grain might go to two and a half cents per pound. I was soon convinced of my mistake, however, and intended to write the editor before the article got into print, but neglected it until too late. No, Brother Hawley, we are not, as you think, "an easy mark for some dealer." On the contrary, we buy our feed in co-operation with our neighbors in carlots and we try to buy it when the price is right and store it to be used when other people are paying dearly for it.

And now I want to refer again to some things beside feed that influence the cost of butter-fat. The things not usually figured are the value of the real estate and the equipment, the interest on the money invested, the taxes, the depreciation on the plant and herd, the labor cost and a reasonable allowance for the skill of the manager which is always indispensable to success. The surveys made in the vicinity of Grand Rapids, covering a period of two years, in twenty-five herds of cows producing milk for the city market, demonstrated that milk cost practically \$1.90 per hundred weight. According to the best data obtainable at present this milk is going to cost the producer from \$2 to \$2.20 per hundred-weight. The average test will be not far from 3.5. It should be understood that everything in the way of expense is figured in this cost so that if the producer gets no more than the cost of production he will receive interest on the money invested, taxes, allowance for depreciation on the herd and equipment, the labor cost and his salary as a manager of the business, so that he cannot be said to lose money under this condition. W. F. TAYLOR.

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THE present situation of the railroads presents two alternatives, efficient federal regulation or federal ownership.

The experience of other countries proves conclusively that government ownership of railroads is more costly and less efficient than the system of private ownership in this country. The railroads of the United States have the lowest freight rates, the smallest capitalization per mile, the highest operating efficiency and pay the highest wages of any railroads in the world.

High Rates on Government Roads

The charge for hauling a ton of freight one mile on the government owned roads of various countries and on the privately owned roads of the United States is shown in the following table:

	Average Freight rate per ton mile
Germany (Gov't Railways)	1.24 cent
France	1.30 cent
Australia	
New South Wales	1.59 cent
South Australia	1.75 cent
Switzerland	2.63 cent
Canada (Private ownership)	.76 cent
United States	.73 cent

No railway system under government ownership can show a record for cheapness and service approaching that of American Railroads under private ownership. What the railroad situation needs is the adoption of a system of national regulation that will encourage initiative and investment and enable the carriers to meet the growing requirements of American business.

Keep Railroads Out of Politics and Politics Out of the Railroads

It is to the interest of the railroads and the interest of the whole country that the railroads keep out of politics and that politics be kept out of their management.

Government ownership under our political system would make the control of the railroads a partisan issue at every election. It would bring political and economic disaster.

No man in the country stands to lose more by the adoption of a political system of railroad management than the farmer. None will profit more from efficient national regulation that will do away with the present conflicts and waste of local control and enable the railroads to make the extensions and improvements necessary to keep pace with the business progress of the nation.

We invite discussion of this question and shall be glad to answer questions and to supply information on request.

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The Importance of Organization

By J. A. KAISER

UNTIL a couple of years ago, more than half the townships in the writer's section, were without a farmers' organization of any kind. The Grange, the strongest organization of the kind in Michigan, was without representation in these townships. The farmers of these townships had little or no influence on legislation for the simple reason that they could not co-operate as a body, in any undertaking. The co-operative idea which swept southern Michigan like a storm, gave most of these townships a co-operative shipping association. These associations in their limited field, have proved wonderfully successful. But even here, the old-time reluctance to organize for the common good, has made itself felt. A man influential in organizing co-operative associations and enthusiastic concerning their benefits, said to the writer:

"These shipping associations are beyond question, a splendid thing. They mark the greatest step forward yet taken by the farmers, in the way of realizing true returns for their labor and enterprise. But much yet remains to be accomplished. Too many farmers right here in our home community are unwilling to bury little, petty differences and co-operate. If all the farmers would take hold with a will, much more of benefit could be accomplished."

Perhaps in a financial way, the co-operative movement has yielded the quickest and most substantial returns to the farmers, of any organized undertaking. It puts them on a footing, as organizations, with the business men of the towns and cities. It gives them more nearly than ever before, the just share of the profits from their investments in money and labor. And yet, as quoted above, farmers are not wanting who stand aloof and decline to co-operate. Some of them go still further: They lose no opportunity to throw cold water on the project. They would rather sell to a stock-buyer and give him a profit than ship under the co-operative method. They seem afraid that somehow, the other fellow will get a cent that does not belong to him.

In considering this question of organization, the age-long cry of the farmer naturally comes into prominence. He has been saying for time out of mind, that he is a prey to the buyer of his products. He has held that he must sell for what the other man is willing to pay, and that he must buy at the other man's prices. Many farmers now admit that they themselves have been largely to blame for these conditions. Those who have joined the co-operative shipping associations think they see a way out, and they are demonstrating the fact that by organization the condition can be alleviated to a considerable extent. The man who stands outside these associations and who makes the old complaint, is deserving of but scant sympathy.

Should Influence the Adoption of Favorable Legislation.

But these co-operative societies, beneficial as they have proved to be, are limited in their scope. As yet, at least, they have taken but little if any part in influencing legislation or in solving many vital questions important to all farming communities. We have had ample proof in recent years, of the power of the Grange and other kindred organizations. Perhaps the latest as well as one of the most notable triumphs of these organizations is seen in the passage by congress, of the farmers' loan bill. For years, farmers' organizations have approved and worked for a system of rural credits. But while a few labored, the great mass stood apart and complained and gave unfavorable criticism. The influence

of these same organizations on the federal good roads act, on the parcel post system, and on many other good acts of legislation, can not be over-estimated.

In many sections of Michigan societies have been formed with the idea of improving the kinds of seed sown, thereby raising the average yield per acre of grains, and eliminating foul seeds from the fields. In this, too, comparatively few farmers, in most instances, have become interested. The importance of the movement is self-evident, yet skepticism and unfavorable comment too often dampen the ardor of the workers.

In union there is strength. Where farmers organize and co-operate, there is something doing. Who doubts for an instant that the farmers could have their just due in any field, if they were all willing to put their shoulders to the wheel? The spirit of independence and individual self-reliance is certainly

praiseworthy. But these sterling qualities, like every other good thing, may be carried to extremes. In these days of co-operation, why not co-operate? The great conquests of the world have not been made by individuals working alone. Individual achievements may be brilliant and startling, but their influence is necessarily narrow. It is only by the subordination of individual differences that great victories can be won. The co-operative creameries, the co-operative shipping associations, co-operative marketing of any product, are the direct outgrowth of organization. Legislation beneficial to all the farmers of the country, has been gained only through organized effort. The farmers—all the farmers—have it in their power to remedy evils that yet remain, and they are many. In the community, in the state, and in the nation, the farmer is still behind in organization. Why not accept the inevitable trend of the age? Why not organize? Why not co-operate? If you do not, your complaints and lamentations concerning the farmer's lot are to the highest degree peurile.

Studying Express Rates

By ISAAC MOTES

SMALL farmers who are in the habit of shipping perishable produce like fruit and early vegetables to market should familiarize themselves thoroughly with express rates. There is a wide latitude here for investigation, because express rates are not figured according to any fixed rule or principle. Different commodities have different rates in different directions. Thus, rates are always cheaper east than west, because more stuff is shipped east than west, and the greater the volume of business the cheaper it can be carried, in proportion to the volume. The rates from St. Louis to New York City are far cheaper, in proportion to distance, than the rates from St. Louis to San Francisco.

Rates are also generally cheaper between points within the same state than between points in separate states, and certainly so in states which have railroad commissions. Then many different articles going the same distance in the same direction take a different rate. Milk and cream generally go at a considerably lower rate than most other commodities. This is because of the great amount of business built up in the carrying of these two articles; also because milk cans are handled easily, and because they are brought to the stations and the empties carried away by the consignees.

It is important, too, for all farmers to know how heavy a package may be and yet be carried at a given rate, and the greatest distance a package of a certain weight may be carried at a given rate, for the larger the package and the longer the distance carried the lower the proportionate rate. An eight-gallon can of milk or cream will be carried 100 miles for twenty-seven cents, but it will be carried 160 miles for only four cents additional, while a ten-gallon can will be carried 160 miles for only three cents more than the eight-gallon can, or for thirty-four cents.

It should be known by every farmer that merchandise rates vary considerably on different kinds of commodities, and what makes them vary is the size of the articles as compared to weight. Heavy articles which take up but little space are carried cheaper than light objects which take up more space. Thus fresh vegetables and the like take a higher rate than hardware, small machinery fittings and the like; that is, in proportion to weight. And yet the rate on fresh fruit and vegetables is reasonably low on account of the large amount of this business which has been developed by modern intensive farming, orcharding and

truck growing, also because many large railroad and manufacturing towns have sprung up all over the west, offering a good market for farm produce.

Here again, a certain rate for a certain distance permits considerable latitude in the size or weight of the basket or box. Thus in a certain direction out of St. Louis one can ship a basket of peaches weighing from twenty to sixty pounds forty miles for thirty-five cents, so it, of course, makes transportation charges much cheaper, in proportion to amount of fruit carried, to ship a sixty-pound basket than a twenty-pound one. Now, the fact that a sixty-pound basket of fruit can be shipped to a certain town or city at the same rate as a twenty-pound basket is valuable information for any farmer anywhere, at any time.

A farmer living close to two or three good wholesale markets in different directions from him should compile a careful list of the express rates on the products he raises, whether field crops, fruit, berries, garden truck or the products of his dairy, to each of these cities. He should figure everything "to a gnat's bristle," and know the greatest weight of certain produce which he can send a certain distance for a certain rate. It might be that the rate to two towns exactly the same distance from his shipping point varied slightly, for some reason, and yet one of these towns might be a better market for his produce than the other, in which case he should of course ship to the better market.

Farmers should ship perishable stuff by the most direct route, where there is a choice of one or more express companies, for it is the habit of express companies, in order to carry a package wholly over their line, to transport it by a very round-about way in order to reach its destination. I have known packages to be carried a circuitous route of 300 or 400 miles in order to reach a town not more than forty miles from the originating point, merely because the company receiving it wanted to make the entire haul, rather than turn it over to a competing company. They carried it far down the state to a junction point with another line of their own company running into the town to which the package was destined, and then brought the package back almost in the direction from which it started, in order to reach the town of destination. In the case of perishable country produce quick delivery is very necessary, and these commodities should be sent to market by an express company making the quickest time to the city.

Benton Harbor's Market

PERHAPS the most interesting fact in connection with the Benton Harbor fruit market is that it has no legal basis for its existence. It is like Topsy; it "just grewed." It is one of the big primary fruit markets of the state. It is performing an economic service and doing it fairly well, although perhaps not as well as it would be possible for a strong co-operative marketing association to do.

The Benton Harbor market occupies one block on a cross street just off from the main business street. There is no city ordinance defining its limits or prescribing how business shall be conducted, at least the city clerk was unable to find any reference to the subject of market in the ordinance book when interviewed on that point. But there can be no doubt as to the existence of the market. The remarkable thing is that without official regulation the selling and buying is practically confined within the limits of a single block instead of being spread out along the streets and roads leading to the orchards. It may be that the city fire engine house located on the adjoining corner is the force that has kept the market from extending itself in the direction of the orchards. In order to keep the street in front of the engine house sufficiently free of teams to permit the fire department apparatus to get a decent start when responding to alarms it has been necessary to hurry the fruit growers around the corner and on to the side street. This crowding of the fruit selling into a single block has been beneficial to all concerned. It has given the fruit grower most of the advantages of a big free open market. It has made it possible for the buyers to do extensive buying with minimum expense. This buying and selling with many buyers and many sellers is the best possible protection against sharp practices. With many buyers the grower is fairly certain to get all that his fruit is worth; and with many sellers the buyer is able to get the fruit needed to fill his orders. With a large market with many buyers and many sellers the law of supply and demand has full play and quickly displays all the virtues that it possesses.

The market is at its best between four and six o'clock each afternoon during the fruit season. The buyers begin to congregate on the sidewalk shortly after the noon-day meal and the fruit growers begin to arrive with their loads about three o'clock and from four to six arriving teams almost form a procession. As each load arrives the buyers gather around the wagon, or auto, and inspect the fruit and put bids upon the different varieties. The grower generally waits until a number of buyers have inspected his load, because he has learned by experience that by waiting a bit he often is able to get five, ten and even twenty-five cents a package above the first offer made him. Out of the many buyers there is almost sure to be one that just needs his load to fill out an order and this one will pay a few cents above the prevailing price.

There are several very favorable features about the Benton Harbor market. One is that it is a spot cash market and that the grower gets his check as soon as the deal is closed by the delivery of the load to a point designated by the buyer. Another good feature is in connection with the inspection by the buyers. The covers of the packages have to be removed to see the fruit, but these covers are replaced by the buyers with scrupulous care so that the packages are none the worse in appearance for the inspection. This is very different than is the case on some markets.

The peach harvest is the big season on this market. The time was when this was the greatest peach market in the world, but since the development of the peach industry in the southern states there are rivals for the honor of being the biggest.

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John Deere Model "B" Disc Harrow

Using a disc harrow before plowing pulverizes surface lumps, works trash into the seed bed and prevents the escape of moisture. Then when the furrow slice is turned, the trash decays rapidly and no large air spaces are left between bottom of furrow and the turned furrow slice. Water in the sub-soil can make its way into the seed bed and plant roots can penetrate to deeper soils. Discing after plowing removes the weeds, and makes the seed bed compact, but not hard. The discs break up lumps of soil.

The Model "B" pulverizes at even depth its entire width. Patented spring pressure third lever—inner ends of gangs can be given light or heavy pressure to disc over ridges or cut out dead furrows without burying the harrow. Independent gangs. All tendency of gangs to crowd to one side is easily overcome by giving them the proper relative angle. Flexible—only that part of the Model "B" harrow passing over an obstruction is lifted out of the ground. Rear section can be furnished to make a double action harrow.

John Deere Spreader

The Spreader with the Beater on the Axle. Mounting the beater on the axle simplified the construction, eliminated troublesome parts and made possible a successful low-down spreader with big drive wheels. There are no shafts to get out of line, no chains to cause trouble, and no clutches to adjust. The only spreader with beater and beater drive mounted on axle.

Low down, with big drive wheels out of the way. Easy to load. Revolving rake, driven by manure moving toward the beater—no bunching of manure. Ball bearing eccentric apron drive—a new and exclusive driving device. Makes uniform spreading certain. Widespread attachment for spreading seven feet wide can be furnished for the John Deere Spreader. No chains nor gears. Quickly removed.

John Deere Beet Tools

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John Deere Beet Cultivators cut an even depth. Pivotal wheel foot dodge. Wheels automatically return to position. Tools easily adjusted. Shovels can be zigzagged on the sides of each row. Lifting lever for raising and lowering tool bars. Hinged pole applies draft direct to drawbars—relieves horses' necks of strain. Steel tool frame, well braced and strong. Can furnish also two-row walker or rider.

John Deere Syracuse Plows

Syracuse Plows have an enviable field record among farmers in chilled or combination plow territory. Here is a feature that is appreciated by the man who buys a Syracuse Plow: Extras ordered will be duplicates of the original parts. Bolt holes will be in the right place. Every part will fit. In fact all necessary parts that go into a Syracuse Plow could be ordered as repairs and when received built into a complete plow. Extra parts are exact duplicates—no trouble results. Remember, Syracuse quality is uniform.

The Syracuse "Slat" moldboard plow sheds and turns sticky soil where the common moldboard plow fails. The full chilled moldboard is cast in one piece with slats and open spaces alternating. This lessens the surface subject to the friction of the moving furrow, which slips along easier than over a solid surface. Possesses same advantage that narrow sleigh runner has over wide one. The slat bottom also is suitable for ordinary plowing.

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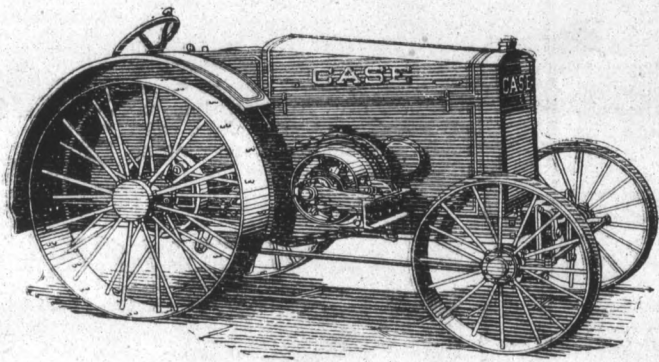
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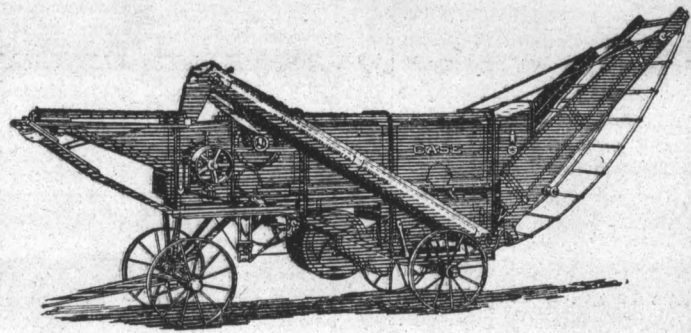
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20x28 Thresher



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The Case 9-18 tractor is truly an all-'round mechanical farm horse because this tractor is so useful.

It will pull manure spreader, gang plow, harrow, grain drill, planter, digger, mowing machine, rake, hay loader, harvester, haul crops and other materials.

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This Case 9-18 has a four-cylinder valve-in-head special tractor motor, and is built for continuous hard pull without overheating. All gears are enclosed and run in oil. Center of gravity low down; therefore no danger of upsetting. Short wheelbase makes for easy turning in close quarters. A boy can operate it.

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Magazine Section

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

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

OF the one hundred thousand people living in the copper country of Michigan, the most important foreign element is the Finnish. Originally coming here to work in the mines, a considerable number have ceased from their subterranean employments and have taken up occupations, as we say here, "on the surface." Finland is above everything else, an agricultural country and has conditions of soil and climate not dissimilar from those existing in the Lake Superior district of Michigan. In Finland's agriculture program dairying leads, as would be natural in a land of heavy rainfall, and lakes and rivers, where

Making Farmers Out of Miners

By L. A. CHASE, M. A.

succulent grasses abound, and market conditions favor the sale of dairy products. In the copper country of Michigan, similar conditions obtain. Hence it is quite in order that former Finnish miners in seeking a vocation above ground, should turn to the countryside and particularly to cows for a livelihood.

The Finns and their cows are natural companions. This applies rather to the women-folk and children than to

the men. It is quite the thing for women of the peasant class to tend the dairy cattle regularly and to relieve the men from all responsibility therefor. There seems to be no friction in the Finnish family on this point. I have never heard of Finns abusing their stock. I have heard of their getting up on cold winter nights and feeding them, of their combing and fussing over them. Their cows always look well kept, and they re-

spond by furnishing the community good milk at moderate cost.

There is some extremely fertile land in the copper country, in spite of its appearance of rock and ruggedness to the casual observer. The Finns are getting much of this land under cultivation. The mining companies have cleared up much of the original timber and the lumber companies are completing the process. At points there is heavy second-growth stuff to be disposed of with hard labor; but when this is done the land is capable of yielding a rich return.

The present problem in this district is to improve on existing methods of

WORLD EVENTS IN PICTURES



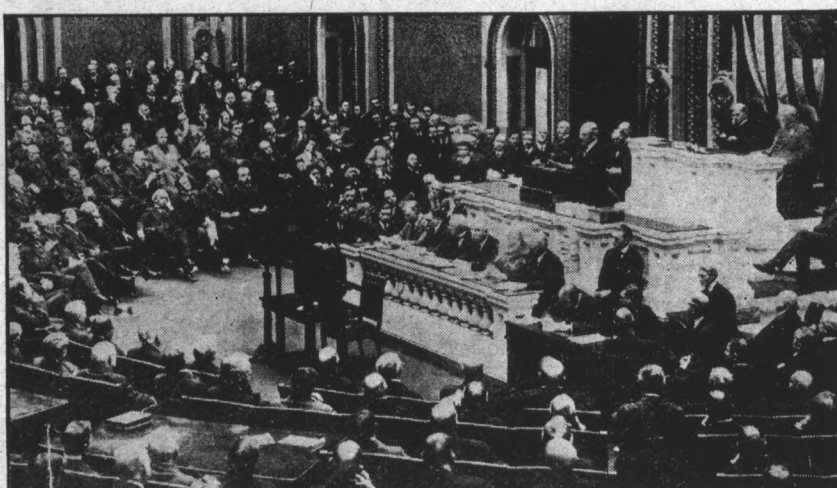
Germans in this Country are Rushing to Take Out Citizenship Papers.



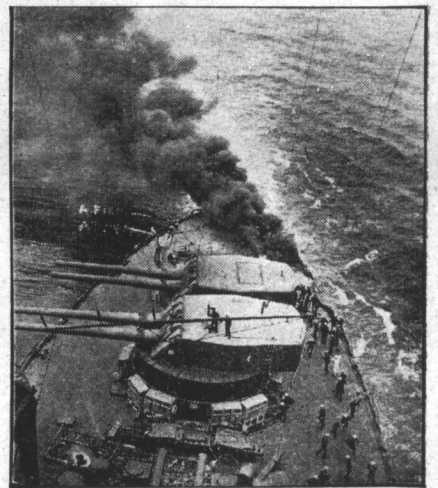
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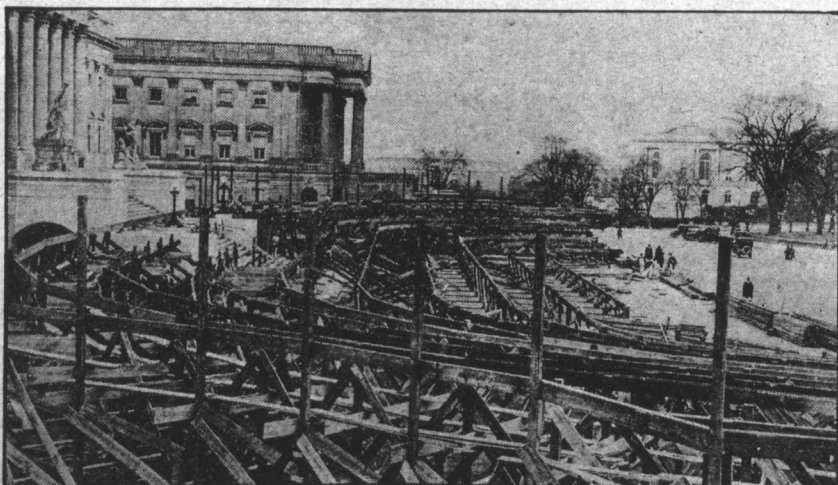
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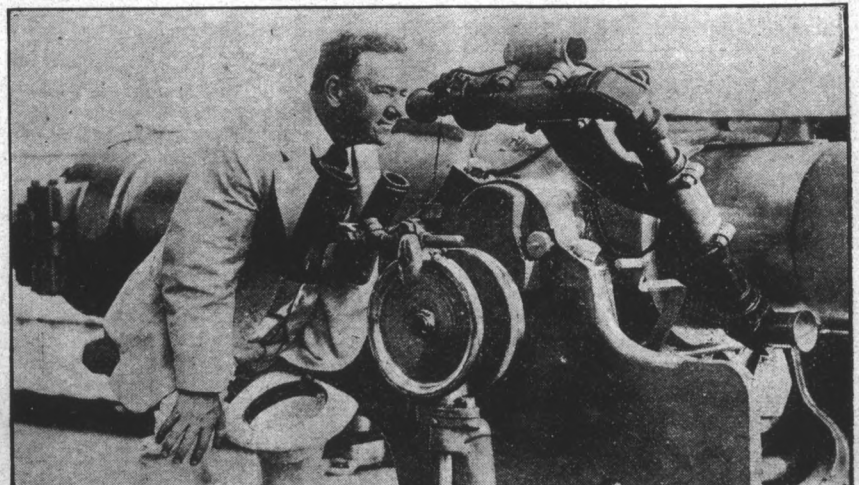
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agriculture. To the solution of the problem of methods both the schools and the county authorities are addressing themselves. Some time since, this journal published an account of the work of the Otter Lake Agricultural School, which belongs to the school system of Portage township. The school board of this township has a complicated problem with which to deal. The board must give the children of Houghton the advantages of a modern city school system, while in the outlying portions of Portage township a schooling adapted to a mining and a rural population must be devised. The school management has gone to work with great breadth of view and has spared neither effort nor money. There are five strictly rural schools in the district, which are organized under the township unit plan. The school grounds do not comprise a paltry few square rods of land so frequently encountered elsewhere, but en-

price of a cigar. There are five Granges in the township, and these hold their meetings in the school houses. Talks on improving agricultural methods are given in both Finnish and English. The meetings are packed and the people would sit till cock-crow if the speakers could hold out till then. But the results of this effort at making farmers out of miners, alien in race and habits, will come when the boys and girls, now in the schools, return to take charge of farms on their own account. This they will do for very few leave the country for the town. It is pretty well settled that the agricultural future of this district lies with the Finn, of whom there are more than twelve thousand that were born in Finland. That is why school and county authorities are expending time and money to make a better farmer of him.

For seventy years the people of the Keweenaw Peninsula of Michigan



Potatoes Raised by Pupils Below the High School Grade.

joy from an acre to forty acres of good soil in which children and vegetation can thrive and grow. The schools serve as experiment stations to assist in determining what plants will do the best in this latitude and climate. It is believed that the alfalfa problem is solved for this district. But they have not determined what kinds of clover, corn, potatoes and other crops will give best results, and these problems have received much thought and actual trial.

Farmers are said to be conservative, and these Finnish farmers, living by themselves and speaking their own language, are ultra conservative. But even they can see the dividing line in the alfalfa field at the Otter Lake school, marking the boundary between that portion where lime has, and has not, been applied. The school's principal and the janitor have cleared several acres of the school's land, this summer. And the farmers are taking the hint and are doing likewise.

The brood sow owned by the school has presented the district with her third litter of eleven pigs, and these, as their brothers and sisters before them, will be disposed of to the farmers in order that the grade of this kind of stock may be improved. "Grade" chickens of a distinguished variety are also being raised for local sale. As fast as it is ascertained what varieties of plants are best to produce, it will be possible also to furnish local farmers with better seed than they are now planting.

A sawdust pile on the school grounds bears witness to another activity of the Otter Lake school. The school and the farmers require lumber for new construction. The clearing of the land yields the logs. A portable sawmill standing on the school grounds supplied this need for the neighborhood.

It is not to be expected that the older folk will change their ways rapidly. Conservatism is the rule among them. Yet when land for a new school was needed, an acre of it was had for the

have devoted themselves so exclusively to the mining of the red metal that they have never produced anything like the food requisite for man and beast. Instances are on record of their even importing, in the early days, hay from Detroit. The development in farming in this district, already described, is, therefore, in the interest of a more economical food supply. It is bearing fruit, this season, in cheaper potatoes than lower Michigan is enjoying. Indeed, potatoes are our most promising crop.

Those interested in better farming in the district have organized the Houghton County Farm Bureau, which receives financial aid from the county and the townships and is thus able to employ a farm expert who devotes his time to the problem of better agriculture. The board of supervisors have contributed two thousand dollars for this year's activities of the farm bureau. Additional income brings the amount available for its farm work in 1916 to some three thousand two hundred dollars. Mr. L. M. Geismar is county agriculturist for the bureau.

He has been furnished an automobile so he can visit the farms and give advice where it is wanted. He has an office in Houghton where farmers in large numbers come to him for counsel.

The farm bureau has interested itself in the organization of new Granges, and there are now twelve in Houghton county. It has promoted co-operative buying for cash on the part of farmers, who have in this way profited in their purchases of wire fence, stock feed, arsenate of lead and binder twine. It wishes to improve the breed of stock and quality of seed. To this end it used the farm at the county infirmary to try out varieties of wheat and oats adapted to this locality. Thus four years of trial have shown that the Worthy variety of oats does best in Houghton county. The seed for this was secured from the experiment station of the Michigan Agricultural College, the best of which has been selected and re-planted each season. Last year, the yield went sixty-five bushels to the acre, forty and one-half pounds to the bushel. Of this crop 650 bushels were sold to farmers here and in other upper peninsula counties. No other variety of oats did as well as this within fifteen bushels to the acre. Red Rock wheat also derived in the first instance, from Lansing has given the best satisfaction at the county farm and 136 bushels have been disposed of this year for seed. With early planting, it is being discovered that winter wheat does very well in this locality, even with its severe conditions through the winter months. The Farm Bureau encourages pure-bred stock and its efforts are bringing results. Registered Holstein and Guernsey bulls have been brought into the district during the past year, together with high-grade cows. It is recognized that ultimately dairying promises best for the agricultural future of "Copperdom." But even orchards are in the making, and recently my Finnish farmer host treated me to an excellent a hand-out of home-grown apples as I could wish and better than I had a right to look for in this Lake Superior land of copper.

Here is the third most populous and richest county in the state, and lies west of a line drawn through Chicago. It is as far from Detroit to Houghton as from Detroit to Washington or Philadelphia, yet all in this same old state of Michigan. More than eighteen thousand men are delving below the surface here for copper and are getting out six million dollars' worth of it each month. That cannot last forever, although it will continue in greater or less degree for many years. But when the copper is gone—if that must be—still the soil will remain, and there will be people to be fed; and the copper country will be in a position to do its share in feeding them. What has been here set forth indicates, furthermore, that it is doing something to feed itself even while it is fetching its copper by the millions of pounds from a mile underground.

"Mister 44" By **E. J. RATH**

She was stifling the last faint sob when Stoddard groped his way into the tangle and led her back to the camp-fire. She went slowly and reluctantly, and when he turned to look at her she averted her eyes.

"What's the matter, Sadie?" he asked.

"Nothing."

He turned her about so that the light fell upon her face.

"Why, Sadie! You've been crying!"

"I'm—I'm tired."

"You poor kid! Of course you are! It was a shame to leave you there so long."

"That's all right. You couldn't help it. I'm just tired."

Her body sagged wearily and her head drooped as Stoddard led her to the tent.

"Good night," he said. "You'll be all right tomorrow."

"I guess so," Sadie replied. "Good night."

Down by the fire he found an indignant Larry.

"You've given her the tent, have you?" he demanded.

"Why, certainly."

"And what about me?"

"You can curl up out here, as John

and I are going to do," replied Stoddard shortly. "Don't be such a fuser, Larry. You'll be bunking in a sixty-thousand dollar private car tomorrow night, with a porter to wait on you. Dream about that for a change."

Stoddard was in no mood for anything but thought. He was puzzled and disturbed. Sadie wasn't tired, he knew. Why did she cry?

Breakfast was a silent and cheerless ceremony. John, the Indian, was taciturn from habit. Larry was surly because he had been deprived even of the poor luxury of the tent. Stoddard said little because his mind was still trying to fathom a troubling problem.

As for Sadie, she was in a mood utterly new to her—a mood which had the effect of placing a seal upon her tongue. It was a wrong way to eat breakfast when a September morning in the Deepwater is trembling and joyous with the promise of a wondrous day; but thus the meal passed.

Stoddard was watching Sadie furtively. Something was wrong, beyond all question; but while he sensed in a hazy way the cause of the trouble it presented no clear outlines to him. It had something to do with the visit of his mother and sister, he felt sure, but beyond that his diagnosis failed. Of her own choice Sadie had avoided a meeting; she had demanded to be hidden. He could not see, therefore, that her banishment into the woods during their call furnished a cause of offense.

Sadie avoided his eyes. Most of the time she stared steadily at the ground in front of her; occasionally she glanced out at the silver water; but never, save by accident, did she meet Stoddard's look.

Breakfast over, she wandered slowly down to the water's edge, then followed the shore aimlessly. All the buoyancy seemed to have gone from her, for she walked in tired listless fashion, her head bent forward, her arms swinging idly at her sides. Chirping birds and chattering chipmunks had no interest for her, nor did the freshness of the morning awaken her spirits as of old.

After an interval Stoddard followed. She was sitting with her back against a dead stump, close to the shore, when he first sighted her. Her eyes were half-closed; she appeared to be quite oblivious of her environment. He watched her for a moment; then approached quietly. Not until he had seated himself a few feet away did she glance at him, and then it was for the briefest interval.

"Let's have a talk, Sadie," he said. She made no answer, but played with a strand of hair that lay across her lap.

"Something's gone wrong," he went on. "I understand that, of course. But I don't know just what it is. If it's my fault I want to apologize and tell you how sorry I am. What is it, Sadie?"

"It ain't anything," she answered dully.

"That's not frank. It has to be something. Let's have it out. You and I can't go on in this fashion, Sadie."

She looked at him inquiringly.

"We're too good pals for that," he added. "We can't have any misunderstandings. Tell me what it is. Has it something to do with last night?"

"Maybe." She spoke reluctantly. "Is it because you didn't meet my mother and Betty?"

She shook her head. "You said you didn't want to, you know."

"It ain't that," she answered.

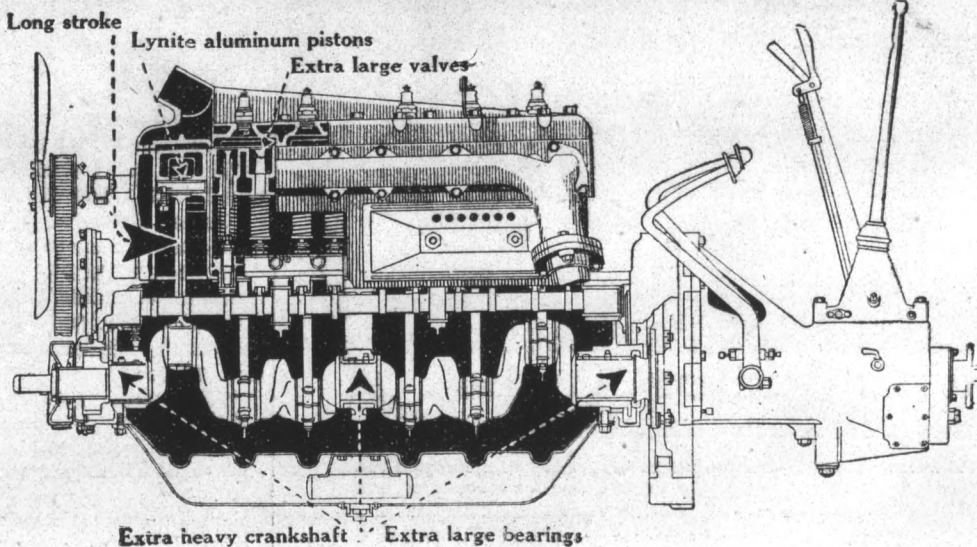
He waited a little for her to go on, but Sadie had again relapsed into brooding silence.

"Then what is it that makes you angry with me?"

"I ain't angry," she said hastily, and with a note of alarm. "Honest I ain't."

"What, then?" She looked at him appealingly.

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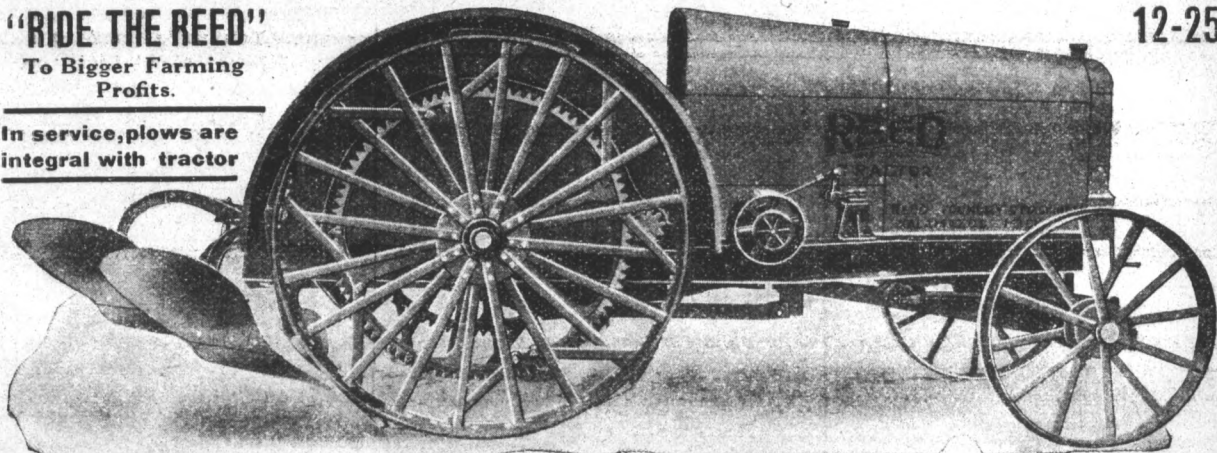
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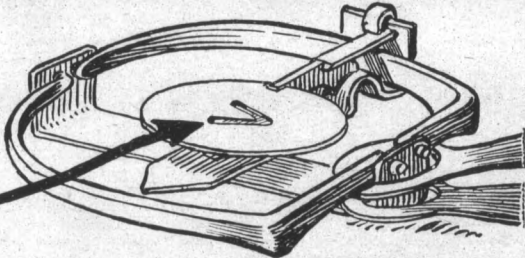
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"Oh, it ain't worth botherin' about, I guess," she murmured. "Only I ain't angry."

"You may as well tell me now," said Stoddard, "because I'm not going to leave until you do. So go ahead."

Sadie clasped her hands about her knees and studied a rock that jutted through the moss at her feet.

"I'm—I'm just hurt," she said slowly.

"About something that happened last night?"

She nodded.

"You heard us talking, I suppose?"

"That's it. I couldn't help hearin'. And I wish I hadn't."

"Go on, Sadie."

"It ain't so easy to say," she faltered. "You been so kind to me I ain't got a right to complain. And I ain't complainin', either. Only it seemed—Well, you didn't ever have a job in sight for me, did you?"

"That's true; I didn't. Go on."

"And you ain't got any way of gettin' me one, like I thought," she mused. "Because—well, because you ain't got any interests here. Your mother said that."

"Not the kind of interests you thought," he admitted.

"And you see, that's the trouble," said Sadie. "You let me go on thinkin' different. And when I found out last night, why—"

She ended the sentence with a shrug. "You felt I hadn't played fair. Isn't that it?"

"I won't say it wasn't fair," she answered. "I guess you did it to save my feelin's. You didn't want me to feel disappointed."

"That's true. But just the same I intended to do all I could—and still intend to Sadie."

"It all comes, I guess from misunderstandin' your letter," she went on after a pause. "You see, I didn't know you was just—playin' up here. I thought you belonged. You oughta have told me when I came."

"It would have saved a misunderstanding," he admitted.

"Can I ask something?" she ventured.

"Of course."

"What was you thinkin' when you wrote that letter? I mean, about me?"

"I thought you were a girl with a beautiful dream."

"And you didn't want to wake me up."

"I suppose that's about it."

"But it was a case where I'd oughta been waked up."

She looked at him steadily for a minute, and when he remained silent she added.

"You woke up, but I didn't."

"How do you mean?"

"You woke up after you got my telegram. You were goin' to send me back. I heard about that, too. Your mother told about the woman at the station; I knew it was the one I met. And you thought she was me."

Stoddard nodded.

"I guess you had the right idea. You knew it was all a mistake and you figured to get me out of it quick. I ain't blamin' you. I ain't got a right to. Only—"

Involuntarily she laid a hand against her breast.

"—Only it just sort of hurts—to find it out."

He was silent. What could he say? Sadie at last understood what he had been trying to conceal from her. He might have known that the truth would discover itself eventually.

Stoddard felt ashamed, yet he was glad that the fiction had been wiped out. It was easier for Sadie in the end.

As he watched her he became conscious of a quickening of his pulse. The little droop at the corners of her mouth was new to him, and strangely attractive. It suggested a sadness a little, but sweetness far more.

The pink of the dawn was in her cheeks, the glowing glory of the sun-

rise in her hair. There was a mist of tenderness and yearning in her eyes. She was wonderful, beautiful—and he had wounded her!

"What can I say, Sadie?" She looked at him with a faint smile.

"I'll say anything—do anything—if you'll forgive me! I didn't mean to hurt you. Why, I couldn't hurt you, Sadie!"

"I know you meant it for the best," she murmured. "I was foolish. Only it did hurt."

"Yes; I can see it now. But it was all because I didn't know, until I found you that night at the station, that you were you. Don't you see that?"

"You mean—"

"I mean," he said, talking rapidly, "that everything changed then. You must know that. Why did I let you go on thinking about the job you were to get? Because I was afraid to hurt you. Why do you think I didn't send you back, after I did find you—as I sent the other woman? Have you thought of that?"

He saw the color slowly flooding her face and throat.

"Did you suppose I could send you back when I had seen you?"

Sadie was trembling. Her eyes would not meet his glance. She was afraid to listen—but her eyes were strangely eager.

Now he was leaning forward and his great, brown hand had imprisoned one of hers.

"Sadie! Look at me!"

She would not. There was a tear glistening on her cheek.

"Why, Sadie!"

His voice had grown husky and his own hand was shaking. Revelation had come to Stoddard within the moment; it startled and thrilled him.

He was standing now and both her hands were in his as he slowly drew her to her feet. For a little they stood thus in silence. Then she slowly raised her head and looked at him bravely through brimming eyes.

"You wonderful—"

The sound of a footstep on the rocks checked his speech. Stoddard turned swiftly and saw Larry Livingston standing a few yards distant. With a little cry Sadie released her hands and fell back a step. Then she fled in sudden panic.

Stoddard glared at the intruder, who with a shadowy smile on his lips advanced.

"I beg your pardon," said Larry. "I didn't—"

"Oh, shut up!"

"It was entirely an accident, Stod."

"There's nothing to talk about," said Stoddard curtly.

"Clumsy of me, I know; but—"

"Go to the devil!"

Stoddard whirled about and strode in the direction of the camp.

Livingston watched him until a bend of the shore hid his figure from sight. He stood smiling for a moment, then his face became serious. Larry was thinking.

Several times he frowned and shook his head. He glanced in the opposite direction. Sadie also had disappeared. For a little time Larry appeared hesitant.

"Useless to talk to him," he muttered. "But— Oh, Lord!"

Then he began following the path Sadie had taken.

It was several minutes before he found her, down at the farther point of the island. She did not hear him until he was very close; then she glanced about timidly, but with the same light in her eyes as that which Stoddard had seen.

It faded in a flash when she recognized Larry, and in its place came a look of weariness and suspicion and defiance.

"Beautiful morning," he said tentatively.

Sadie, instinctively cautious, weighed

this observation carefully before admitting that it was.

For a minute or two Larry spoke commonplaces and received answers, when they were required, that consisted of monosyllables. Sadie knew he had not found her by accident. Behind the cloak of his perfunctory talk was something concealed, she instantly divined. His words were the mere patter of a stage magician manipulating his cloth.

Sadie was in no patient mood. She hated this friend of No. 44's and distrusted him, although she did not fear him. He was still talking aimlessly when she interrupted him sharply:

"Let's have it straight," she said. "What do you want to say to me?"

"Well, I don't want to offend you," he answered, studying her face narrowly, "but I wanted to say something about Stoddard."

"Well?"

"And you," he added, pausing to watch the effect.

"Say it, then."

Give Larry credit for his. He had the courage of his meddlesomeness.

"Stoddard is very fond of you,"

"Did he say so?" Sadie controlled her voice with difficulty.

"Oh, no. I shouldn't think of discussing it with him. Certainly he would not mention it to me."

She did not need to be told that.

"I imagine that you are rather fond of him," Larry continued.

Sadie's face was flushed, more in anger than embarrassment. To her this was like vandalism in some sacred temple. But she checked the retort that was on her lips and waited. She wanted to understand more.

"I did not intentionally intrude a little while ago," said Larry, speaking smoothly. "I would like to have you know that."

She believed he lied but made no comment.

"I understood even before then," he went on. "Now, of course, you may think this is something I have no right to talk about. But Stod is a friend of mine, so I've taken the liberty."

"I notice that. Go ahead."

"Thank you. I'm going to assume as a basis for what I say that you are very fond of Stoddard. Wait! I'm going to make it as short as possible and I'm not going to ask you to do anything but think about what I tell you. If you do care for him it does you credit. He is a fine fellow and he is worthy of anybody."

"Stoddard comes of a very old New York family. His people are not only wealthy but their social position is exceptional. You have seen his mother and his sister. I think you understand without anything more being said in reference to that."

"Their world is the one in which he has been reared and to which he is accustomed. He is a man of education. He has already done brilliant work in his profession and he has a big future ahead of him. His family—his mother—worship him. They think more of his career, probably, than of any other thing in this world."

Livingston seemed to be at a loss to proceed.

"It's rather difficult to say what I had in mind," he said.

"You mean about me?" asked Sadie steadily.

He nodded.

"You needn't say it if you don't want to. I understand. You mean I'm different from him. I'm ignorant. I don't talk right. I ain't got a social position. I'm a factory hand."

"That's all right; I know it. It's said now. Go ahead."

Larry sighed softly. The bridge had been crossed.

"None of those things are to your discredit in any way, you understand," he said. "I don't want you to think that."

"You can cut that stuff out," said Sadie quietly. "I ain't lookin' for sym-

pathy. If I wanted to find it I'd get a dictionary. Just pass that and go on."

"Well, what I just wanted to put before you was this: Take a man like Stoddard, with all that he is and all that he can be. Take a girl—well, like yourself."

"Assume they love each other. Assume that this man should desire to marry this woman. Assume that he tells her so."

Sadie waited grimly. She knew it was shameful, this cold, impersonal vivisection of a thing that breathed with life and love, but she had steeled herself to hear him out.

"In that case," Livingston said slowly, "and assuming always that she had a real love for this man—and love means sacrifice—what would this woman do?"

He paused, but not as if he expected an answer from her.

"That's what I want you to think about," he added as he turned away. "Thank you for listening."

He walked steadily until he had gone from her sight, unhurried and methodically, like a man conscious of a duty properly performed.

An hour later Sadie was still sitting where he had left her. She was looking out across the water, where the bluff shores of the mainland lifted their ragged summits against the sky, but she saw nothing of her big outdoors. She was looking only into her soul. Her eyes were calm and clear, her face peaceful. Now and then her lips moved without sound.

"What would this woman do?" they were saying.

Then:

"I know."

Back in the camp Livingston found Stoddard smoking in grim silence. He made no effort to draw him into conversation and Stoddard paid not the slightest attention to his presence.

The big man's mind was filled with a vision that his almost forbidding expression did not even faintly reflect. He looked angry and unhappy, but he was not. He was serious, but very content.

Something that had troubled and baffled him had suddenly become clear. The road was open and just beyond the turn was happiness. Presently he would overtake it. He could wait a little. What mattered an hour or so now, when a lifetime lay ahead?

Stoddard scarcely raised his eyes when Larry announced that the launch from the hotel was in sight, and he did not move from his place until it neared the landing. Then he arose slowly, knocked the ashes from his pipe, and went to meet his mother and Betty.

"They telephoned us from the station that your uncle has arranged for a special locomotive," said Mrs. Stoddard as she greeted him. "So we are going now."

Larry, eager to be off, had already climbed into the launch.

"Won't you change your mind, John?"

Stoddard shook his head.

"No, mother. Thanks awfully. I'm going to stay here a while."

"Alone?"

"I've got John for company—the other John; although I'm pretty good company for myself."

"The lunatic is still roaming," volunteered Betty.

"No news of him yet?"

"One of the men at the hotel thought he heard him yelling off in the woods somewhere, but they haven't found him."

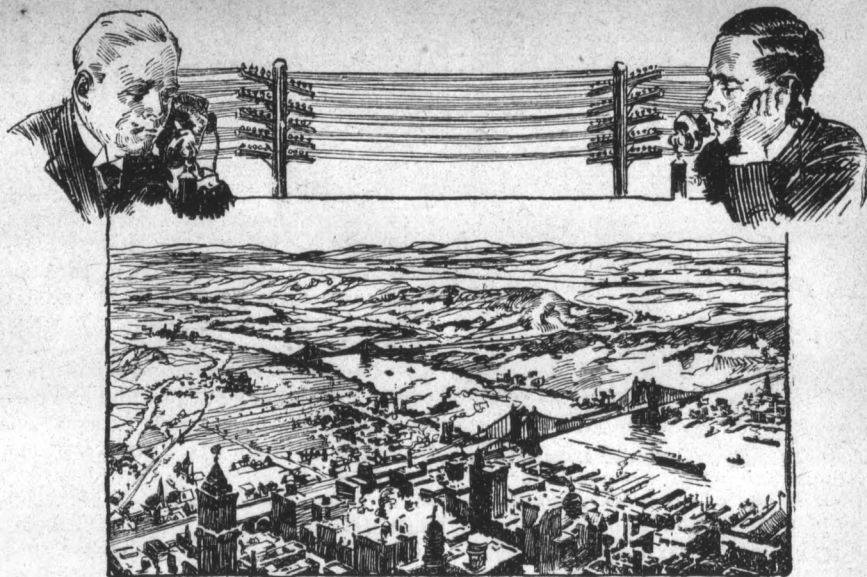
"More likely a loon than a lunatic," commented her brother with a laugh.

"At least you'll come to the station with us," pleaded Mrs. Stoddard.

He had not planned to do that. But he could give no good reason for refusing. After all, it merely meant a few hours. Then he would come back and—

"Surely!" he said. "Wait a minute."

(Continued next week.)



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Working for Life—Some Ways of Doing It

The Mechanic's Way

By EARL R. RICE

IT was rather hard to select a proper heading for this article. No formal title is big enough to cover all that could be said about Mechanical arts. The workers who may be classed as mechanics form a great host, and do one and a thousand things. To write about them all would be impossible and far beyond the intention of this paper. The subject is put into the series partly for the sake of the contrast it affords and partly to correct a wrong impression that exists in regard to that great influence which draws so many men and boys away from the broad acres. By "mechanics" is meant that diversified activity that goes to make up the industry of the city as put over against that of the farm.

When we stop to think of the product of the city worker and consider all that he sends out to others, we stand amazed. Complex as life is, the great factory is absolutely necessary. It is both a cause and an effect. The demand of home and farm calls it into being. Implements, tools, engines, wagons, automobiles, rope, fences, building materials of all description, from concrete to nails, bear the stamp of the city. Clothing, books, papers, dishes, furniture, music, things for use and things for pleasure, are city made. There are a multitude of food products too, that are of use only as the city refines and polishes them.

The factory itself is called into being by the outstretched hands of the wide-wide country. The army of men who crowd into these great work-houses do so in obedience to the call of some distant dim, background.

The product that goes out from the boiling pots of industry helps to reshape and remold the same country. From the various points of distribution the long trains pull out, load after load. The worker in the city sends a daily greeting to the brother in the country, and if only the finished product could speak and tell all of the processes and experience it has passed through, the story would be a wonderful one, indeed.

Everything that goes to make life larger and happier and fuller is a direct contribution from him who makes it, to the world's sum total of good. And so the mechanical arts are worthy ones, and the man who toils as a city worker occupies a great place in society's economy.

"The touch of toil makes all the world akin."

There is a glamour about the city and its toil and traffic which is very alluring. The light and companionship and sparkle of it all is hard to be resisted. Many a quiet rural family is robbed of its best members by the great call to the city. The trend is toward city life and away from the country today, as never before. The comparative quiet of the one loses out when contrasted with the rush and hurry of the other.

There is a suspicion that too much and too large promise is held out by the industries of the town. Evidence is presented by the fact that many who see the glow and glitter come back after awhile with sad stories. It is true, too, that some of the best and brightest men of the city are among those who left the quiet scenes of farm and village to seek fortune in the crowded walks of life. In spite of argument for or against, the process still goes on.

Sober judgment would declare that the young man who seeks a place among the workers in town enters a fierce competition. If he comes with untrained hands his apprenticeship is bound to be long. He is forced to work under the stress of economic conditions that try strength and endurance almost to the limit. In place of free-

dom of range and the fresh air of hill and forest and lake he is confined to narrow walls, smoke and grime of factory fouled air, and daily danger from vicious contagion. Food is not always wholesome, quarters are not always pleasant, and companionship is sometimes bad. Prices of good maintenance are sometimes prohibitive. Board and rooms frequently take the major part of the pay envelope. For one man who stands the strain, and goes up to positions of influence and competence, there are many who fail. A visit to shelter homes to be found in any great city is full of enlightenment on this point.

The broken, shuffling gait of many men who go out to their work in the morning and return tired and spent at night, tells its story. The daily grind squeezes all of life and vitality out of the body of the average factory worker. Nor can it be justly said that the worker gets a wage that warrants him in continuing the round day after day. Occasionally a workman owns his own home, but he is the exception. Most of them are renters, and twenty-five to forty dollars per month is a big price to pay for a house to live in. To raise a family and meet the usual obligations of life in these days of H. C. of L. is a task of gigantic proportions.

There are dangers, too, in the city which are unknown elsewhere. The average young man who sets out to find the festering sore spots of the town seldom escapes contamination.

On the whole, it is probably true that the man who seeks the city with only the point in view that he can earn more money is likely to be disappointed.

It should be said that good influences are to be found and good men are everywhere. Things of real value are open to the searcher, but the question may be reasonably asked: "Could not they be found elsewhere and subject to fewer dangers?"

The writer is well acquainted with a family that came to a great city a score of years ago, that is, the parents came at that time. The husband and father, for the family grew in time to a half dozen, began working in a nut and bolt plant. He earned a fair wage, kept his job for twenty years, and brought up the boys and girls. These young people became wage earners in turn and are now practically repeating what the father did. The father died, or it should better be stated, was worn out, at fifty-four years of age. His story could be duplicated many times.

Another instance, in different point. A young man and his bride came from the farm. He found ready work at what at first seemed splendid wages, but before the summer was gone they awoke to the realization that they were not getting ahead. They were justified in going back to familiar scenes though at less money. Another family came to undertake a small business. With money lost, the wife now maintains herself and family by keeping boarders.

But people do seek the city and make good, overcoming all unfavorable conditions. This latter kind rise to good money, good influence, and in many cases to wealth.

"Who are they and how do they do it?"

While no hard and fast rule applies here it is safe to say that the man who is prepared for it and can step into a good place is safe. With enough to insure standing room, a trade, an education, a position, or with property sufficient to enable him to take and hold rank, he can combat with adverse conditions if they arise. He will succeed, where the unprepared and immature invite disaster.

The mechanical pursuits and industries, worthy in their results, offer chance for service. Like fire, however, they are good servants when controlled, but hard masters for the weak. Next week, "The Farmer's Way."

EVOLUTION OF THE MOTOR CAR.

BY C. S. RIEMAN.

The first record we have of a vehicle traveling without animal power is found in the ancient Chinese records, which give an account of the Kite Carriages. These vehicles were driven by the wind blowing against a sail attached to the carriage. In the early reign of King James I of England, a patent was issued to Hugo Upton, reading as follows: "For the sole making of an instrument which shall be driven by the wind for the transportation or carriage of anything by land." Some believe that Upton secured his idea from Kite Carriages in old China.

The Early Steam Carriage.

However, the history of mechanically driven carriages dates back to 1680 when Sir Isaac Newton proposed a steam carriage to be driven by the reactive effect of a jet of steam issuing from the nozzle at the rear of the vehicle. Some years later, a crude carriage was built, an early record of which reads as follows: "Mr. Pinchbeck has recently built a curious steam machine that has traveled without horses for forty minutes and has covered a considerable distance." In 1759 there appeared an English advertisement reading as follows: "Mr. Ladd's patent four-wheel carriage, that goes without horses and will carry four or five persons at the rate of six miles an hour, is built on solid mechanical principles." In 1802 Richard Trevithick built a steam carriage which was exhibited at London, having driven itself ninety miles. In 1830 a horseless carriage named "The Automotion," was built by Walter Handcock. This was really the first steam carriage that proved at all practical. It covered 4,200 miles during its life and carried a total of 12,761 passengers.

Early Internal Combustion Engines.

The first internal combustion engine was invented by Abbe d'Hautefeuille in 1678, in which the explosive power of gunpowder was employed to drive a piston in a cylinder. This was the forerunner of the modern gasoline engine. Some years later John Street developed an engine operated by liquid air ignited by a flame. The first internal combustion motor which used gas was invented in 1884 by Gottlieb Damler. In 1885 he successfully applied this engine to a bicycle, and in 1886 Carl Benz invented his Single Horizontal Cylinder, water-jacketed engine, which he applied to a three-wheeled carriage. The first practical gasoline automobile built in America was constructed by C. E. Duryea in 1892, but it was found to be under-powered.

In 1894 he built a new four-cylinder car which proved quite successful in the Chicago "Time-Herald Race." The first automobile endurance race of international importance was held in France in 1894. Two Panhard machines contested. Both claimed a 3.5 horse power and were driven by Messrs. Panhard and Peugeot. In 1895 the second automobile endurance race was held in France and covered a distance of 1,730 miles at the then remarkable average speed of fifteen miles per hour. Six years later, however, the same course was covered at the rate of fifty miles per hour. In 1897 at the Paris-Trouville road race, a speed of twenty-nine miles an hour was developed in a gasoline automobile. What a difference today. Not long ago a 300 horse power car raced at a terrific speed of 143 miles an hour.

Woman and Her Needs Plan for Success

WHEN everyone wakes up to the fact that the difference between success and failure in life is largely due to wise planning, we shall have no more failures. For each man and woman, or rather youth and maiden, will begin to take stock of their capabilities, duties and opportunities and decide on the outset what course will most surely bring them to success.

We shall certainly have no more poor housekeepers. For good housekeeping, more than any other occupation, depends upon wise planning. Surely no other woman worker has to think of so many things at once as the cook, who confines her attention entirely to the kitchen. And when you add to the cooking the laundry and cleaning and sewing and mending, you can readily see that only a woman who is skillful at planning will ever be able to get through.

It seems strange that so many women never take time to think of easier ways of doing. Perhaps it is because they hate housework so they refuse to give it a thought. But if they only knew that thinking out a sane way to do it would save them immeasurable steps and make the work more interesting, surely they would change their attitude.

One woman has been a housekeeper forty years, and on a farm. She has loathed the work and loathed the farm all the time slaving fourteen hours a day at work she could have done in six or eight. The trouble is she is never ready for anything. When she gets up in the morning it is to find she forgot to see that the woodbox and water pail were filled the night before. Often wood has to be cut before a fire can be made. Breakfast is dragged out till eight and eight thirty, even in the busiest times, and the men depart to the field disgruntled and usually swearing.

By the time breakfast is over she is tired. Not because she has done so much physical work as because her mental attitude is wrong. So she sits over her coffee another half hour. Then perhaps she decides to rip up a dress that morning, though beds are unmade, dinner not even planned, the chickens to be fed, berries to pick and a thousand and one more important things to do. The dressmaking proves so fascinating that it is often prolonged till 11:30. Then the shouting of men in the barnyard brings her to her senses, and the breakfast table stands as they left it. She dashes out, clears the table in a jiffy, resets it for dinner to make her husband think she is

about ready when he gets in, and after that proceeds to peel and cook potatoes, go to the garden for vegetables, run up and down cellar a half dozen times, when once would do if she took a tray and stopped to think of everything she was going to need, and finally at 1:30 dinner is ready.

In the afternoon there are all the dishes to wash, the beds to make, the rooms to tidy, perhaps fruit to can, supper to prepare, a cake to bake—but why add to it. You can imagine the rest.

Of course, this is not a picture of every day, but it is so near like every day that it explains her hatred for housework and the reason why farming is a failure in that home. A serious taking of stock, combined with judicious planning, would not only make her work ten times easier, but would change her entire outlook on life and add dollars to her bank account.

It would not take much effort to see that the wood and water were at hand every night for the morning meal. The table could be set the night before, and the breakfast so nearly ready that it could be out of the way by 6:30 instead of 8:30. She would then be fresh and ready to clear the dishes out of the way in a jiffy, follow it with bed-making and putting rooms to rights, and get her cake for supper baked before time to start dinner. By making her brains do half the work, she could have dinner so near ready that she would be waiting for the men when they came up, instead of the other way about. It doesn't take a moment longer to start the meat and potatoes cooking at the same time, than it does to start the meat when the potatoes are done and ready to serve, as so many cooks of long standing are guilty of doing.

Home women often mourn because they have no opportunity to help in big things. If they only knew it, they have the greatest of opportunities for successful housekeeping oftener than anything else means success instead of failure for the husband.

No farmer can succeed who has to wait three or four hours each day for meals, and then eat food poorly cooked and hence indigestible. Nor can he get very far ahead if he has to get his own meals half the time, and as a result live largely on cold milk and bread. Good cooking is at the foundation of every real success, for good cooking means good health and a clear mind, two most important factors to wage earners. DEBORAH.

The Real Farm Partnership By "A Michigan Farmer"

IT is not quite the usual thing perhaps, for a man to write on matters pertaining to woman and woman's rights. Perhaps the very fact that it is unusual denotes that the male is not quite as interested in this particular as he might be.

As we are about to consider from the farmer's standpoint we will eliminate all that does not directly concern the farmer and his wife on the farm.

I will state as a kind of preface that I consider a man and his wife partners. Their marriage constitutes a partnership. Whether they succeed or fail to make a success of life depends upon the nature of their combined efforts in that direction. If they enjoy success I believe that it should be shared equally. If they are unfortunate

they must likewise divide evenly the unpleasantness of the position.

So much, then, for partnership. The next step, then, is to form a partnership, a farm partnership that will be agreeable to both parties.

A real and lasting partnership cannot exist where one member does not understand just how matters stand with the firm. Every detail of the business from the financial end to the mere work the business will make necessary must be discussed and planned beforehand by the partners, if they expect each other to act wisely and intelligently at all times.

I think that it is right here that the two partners—man and wife—on the farm, are liable to get tangled up in the web of dissatisfaction. At least,

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they step into the web at this point. Too many of our young couples start out on farms on the wrong tack. The man attempts to run the business of farming without the mental aid of his partner. He fails to enlighten her concerning his financial position. He fails to consult her when making important business movements. He fails to inform her of setbacks. In short, he fails to become a partner.

If we should ask the young farmer why he does neglect to do these important things, his excuse is that he does not expect nor wish his wife to delve in matters pertaining to business. Does not believe it is a woman's place to do so. He has the wrong idea entirely.

Because the wife-partner is not informed concerning these matters she fails to conduct her end of the business judiciously. Because she is not consulted about important matters she naturally loses more or less interest in such matters sooner or later. In fact, she settles down to the mere routine

ily perhaps than from any other. There always exists a limit for each particular individual or individuals to go in the matter of expenditures according to his or their particular financial position. A farmer with a mortgage of \$1000 on his farm cannot wisely purchase what perhaps the farmer with \$1000 in the bank would be foolish to do without. He must hold himself down to his particular limit.

How, then, can a wife-partner unaware of actual conditions conduct the household expenditure as wisely as she should? Naturally, she will not be as interested as if she were an active member, so-to-speak, of the firm, hence her inability to see her way.

I believe that this leads to the you take the egg and cream money or odds and ends, and I'll take the significant proceeds—position taken, perhaps, all good-naturedly by farmers and their wives in adjusting the finances.

It seems that a real interested partner would most naturally handle the contents of the firm's pocket book as



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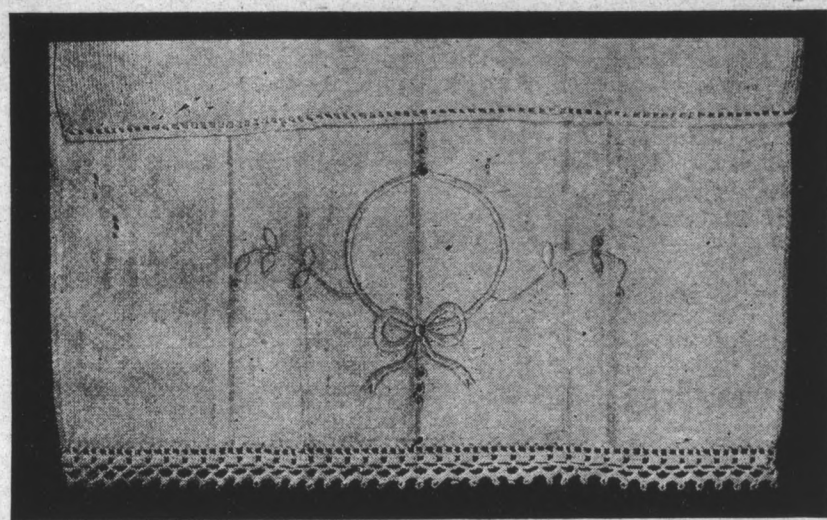
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of housework and perhaps a partner who could have saved the business ship from a wreck is lost as far as an ally to the business end of the firm is concerned. Moreover, neither husband or wife may ever realize that such is the case.

It is true that few girls are able to consider and advise wisely on farm business matters right off the reel. It is also true that many of the young farmers themselves make ridiculous mistakes at the beginning. Time and experience serves to develop many of them into expert farmers. Why, then, cannot the partner in the house develop likewise if given the chance. I believe that many of them would rise to the occasion if given the necessary interest in affairs without which development is impossible.

The effect of having been president, secretary and treasurer of the whole works while on the way to success, does not signify that the farmer will resign any of these offices when a firm footing is secured. Having been quite instrumental in attaining the position, he all unconsciously perhaps, leaves the partner somewhat in the rear. He is like the man in the boat who, tiring of rowing, installed the gas motor for propelling purposes, and became so interested in seeing it work that he forgot to inform his wife that her work of rowing in the other end of the boat was now unnecessary.

Too many farmers are putting in the new model machinery, the tractor, the gas engine, the litter carrier, etc., and become so interested in the installation of the same that they forget the partner in the house and her equal right of enjoying the labor-saving devices their financial position permits.

The gasoline engine will as willingly turn the washing machine, manipulate the pump handle, or revolve the barrel churn, as it will spin a corn sheller or feed grinder.

The advantages of having a real partner can be illustrated from the financial standpoint more satisfactor-

ily perhaps than from any other. There always exists a limit for each particular individual or individuals to go in the matter of expenditures according to his or their particular financial position. A farmer with a mortgage of \$1000 on his farm cannot wisely purchase what perhaps the farmer with \$1000 in the bank would be foolish to do without. He must hold himself down to his particular limit.

How, then, can a wife-partner unaware of actual conditions conduct the household expenditure as wisely as she should? Naturally, she will not be as interested as if she were an active member, so-to-speak, of the firm, hence her inability to see her way. I believe that this leads to the you take the egg and cream money or odds and ends, and I'll take the significant proceeds—position taken, perhaps, all good-naturedly by farmers and their wives in adjusting the finances.

It seems that a real interested partner would most naturally handle the contents of the firm's pocket book as

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BY GRACIA SHULL.

The neat design embroidered on one end of the towel gives ample space for initials or monograms of script letters. The design, which may be used to decorate bed linen, dresser scarf, runners, etc., is five and one-half inches high. It is very simple but decidedly neat and effective. The towel measures fifteen by twenty-one inches and is a popular size.

To make upper edge of trimming, use silk finish crochet cotton and medium fine steel hook. Turn a very narrow hem and work over it.

First Row. Insert hook in one corner of upper edge, draw the thread

through and chain 5, skip space equal to two stitches, double crochet 1 in next place, * chain 2, skip 2; this will form the first two mesh. Repeat from * to end of row, ch 1, turn.

Second Row. Single crochet 3 in each mesh along entire row. Lower edge: For the first row proceed with one row of mesh as in top row. Second: Chain 5, turn, * double crochet, (dc) 1 over double crochet, 2 doubles in second mesh, double 1 over double, chain 2, skip 1 mesh, dc 1 over dc, 2 doubles in mesh. Repeat from * to end of row. Chain 6, turn.

Third Row. * Single crochet (sc) 1 in first mesh, chain 6, sc 1 in second mesh, ch 6. Repeat from * to end of row.

Fourth. Same as third, catching single crochet over center of 6 chain, ch 1, turn.

Fifth Row. Sc 3 over first loop, ch 6, form picot with 6 chain, sc 3 over last half of same loop. Repeat in each loop along the entire edge. These guest towels will make very appropriate gifts to college girls or brides-to-be.

There's sometimes a good hearty tree growin' right out of the bare rock, out o' some crack that just holds the roots; right on the pitch o' one of them bare stony hills where you can't seem to see a wheelbarrow o' good earth in a place, but that tree'll keep a green top in the driest summr. You lay your ear down to the ground and you'll hear a little stream runnin'. Every such tree has got its own livin' spring; there's folks made to match 'em.—Sarah Orne Jewett.

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Markets.

GRAINS AND SEEDS.

February 20, 1917.

Wheat.—The trend of the wheat trade has continued upward during the past week. Practically all influencing factors have contributed to the stronger position of the market. Crop conditions in this country are not of the best, as in many sections the snow is off the fields, while in other parts, particularly in the southwest, there is a lack of moisture, although some rain fell late last week. Wheat is not being delivered from the farms so freely as a year ago and because of the unusually high prices prevailing for the other cereals, and for all kinds of food stuffs, the domestic demand for wheat is fully up to normal. The demand from the British Isles and western Europe is far from being satisfied, and by reason of the shortage in the southern hemisphere, and of the inability to secure supplies from Russia, the call from the United States promises to be incessant until the new crop is harvested. Improvement in land transportation and in passage across the Atlantic will materially aid in advancing prices. One year ago No. 2 red wheat was quoted at \$1.27½ per bushel. Last week's Detroit quotations were:

	No. 2	No. 1	May
	Red.	White.	
Wednesday	1.83½	1.78½	1.86½
Thursday	1.85½	1.80½	1.88½
Friday	1.85½	1.80	1.88
Saturday	1.85½	1.80½	1.88½
Monday	1.88	1.83	1.91
Tuesday	1.92	1.87	1.95

Chicago.—May wheat \$1.80; July \$1.52½; September \$1.40¼.

Corn.—The corn market is firm with prices advanced to meet the higher wheat quotations. The fact that a great deal of substitution for wheat is being made abroad with corn lends strength to the bull side of the market. While it was feared last fall that domestic consumption would be greatly restricted through limited feeding operations, this fear has not been fully realized because of the substantial advance in live stock values. One year ago No. 3 corn was selling at 72c on the local market. Last week's Detroit quotations were:

	No. 3	No. 3
	Mixed.	Yellow.
Wednesday	1.05	1.06
Thursday	1.06½	1.07½
Friday	1.06½	1.07½
Saturday	1.06½	1.07½
Monday	1.06½	1.07½
Tuesday	1.06½	1.07½

Chicago.—May corn \$1.02½ per bu; July \$1.00½.

Oats.—This cereal is being freely used abroad to help out the wheat shortage, with the result that the United States surplus is meeting with an improved demand. Standard oats a year ago were quoted at 48½c per bu. Last week's Detroit quotations were:

	Standard.	No. 3
Wednesday	61	60½
Thursday	61	60½
Friday	61	60½
Saturday	61	60½
Monday	62	61½
Tuesday	63½	63

Chicago.—May oats 57½c per bu; July 55½c.

Rye.—The market is higher, with cash No. 2 quoted at \$1.45 per bushel.

Beans.—Quantities marketed are small. Although high prices are restricting consumption the amount is less than generally thought because there is no other food that can be purchased cheaper. Cash beans are quoted at \$6.95 on the Detroit market. The Chicago trade is confined largely to hand-picked beans which are firmly held. Michigan pea beans, hand-picked, are quoted at \$7.20@7.25; red kidneys \$6.75@7.

Peas.—Trade fair and steady at Chicago with field peas quoted at \$2.50@3.70, sacks included.

Seeds.—Prime red clover \$11.75; March \$11.65; alsike \$11.60; timothy \$2.50.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$9.30; seconds \$9; straight \$8.70; spring patent \$9.80; rye flour \$8.80.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$37; standard middlings \$38; fine middlings \$40; cracked corn \$44; coarse corn meal \$43; corn and oat chop \$39 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$14.50@15; standard timothy

\$13.50@14; No. 2 timothy \$10@11; light mixed \$13.50@14; No. 1 mixed \$13.50@14; No. 1 clover \$12@12.50.

Pittsburg.—No. 1 timothy \$16@16.50; No. 2 timothy \$14.50@15.50; No. 1 light mixed \$14.50@15.50; No. 1 clover, mixed \$15.75@16.25; No. 1 clover \$16@16.50.

Straw.—In cars at Detroit, rye straw \$9@10; wheat and oat straw \$8.50@9 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—The local market is active at slightly lower values. Creamery extras 40c; do firsts 36c; packing stock 24c; dairy 28c.

Elgin.—Unsettled conditions and delayed shipments have kept market firm. The price, based on sales, is 42c, the same as last week.

Chicago.—Market is steadier after the flurry of last week. Prices are unchanged. Extra creameries 42c; extra firsts 41½c; packing stock 26½@27½c.

Poultry.—Offerings are readily absorbed at prices that rule above last week's quotations on all kinds except turkeys. Demand is good and receipts light. No. 1 spring chickens 23@23½c; No. 2 do 21@22c; No. 1 hens 24c; No. 2 do 22c; small do 20c; ducks 23@24c; geese 22@23c; turkeys 25@26c per pound.

Chicago.—Offerings are small and demand limited. Fowls 15@20½c; spg chickens 20@20½c; ducks 20@22c; geese 16@18c; turkeys 12@23c.

Eggs.—Receipts are some heavier with prices off, but the decline is coming slower than usual. Firsts 42½c; current receipts 42c.

Chicago.—Increased offerings have forced prices to lower levels and has livened up the demand. Fresh firsts 40½@40¾c; ordinary firsts 39@39½c per dozen; miscellaneous lots, cases included 40@40½c.

FRUITS AND VEGETABLES.

Apples.—Market steady with prices unchanged. Baldwins \$5.25@5.50; Spy and King \$5.75@6 for best. At Chicago the feeling is strong with good demand and light supply. No. 1 stock sells at \$3.75@6 per bbl; No. 2 at \$2.25@3.

Potatoes.—Higher. In carlots at Detroit, in sacks \$2.55@2.60; Washington \$2.75@2.80 per bushel. At Chicago business is of moderate volume. Market is higher and active, with prices ranging from \$2.40@2.60 per bu.

WOOL.

Trade is active and values higher. Speculators are busy, thinking that still further advances are due. In the west dealers continue to contract for wool on sheep's back and are paying unusually high prices. At Boston Michigan unwashed delaines are quoted at 47@48c; do combing 41@48c; do clothing 38@42c.

GRAND RAPIDS.

The potato market has been soaring during the past week, Traverse City reporting sales above the \$2.50 mark and prices elsewhere reached record-breaking figures. White beans are ranging from \$6.25@6.50, with red kidneys at \$5.75. Eggs are around 38c and are very much a weather proposition. It is being predicted now that eggs will not go below 24c this season. Dairy butter is quoted at 32c. Apples range from \$1.25@2, with the movement light. As usual oranges seem to be cutting deeply into the apple trade. Dressed fowls are worth 18@19c. Hay is selling on the city market at \$11@13.

DETROIT EASTERN MARKET.

Sales Tuesday morning were hampered by the fact that roads were too slippery for peddlers to go out, which cut off considerable demand. Apples \$1@2.25; potatoes \$2@3; parsnips \$2.75; eggs 50@55c; pork 17c.

LIVE STOCK MARKETS.

Buffalo.

February 19, 1917.

Cattle.—Receipts 150 cars; shipping grades 25@40c lower; butcher grades 50c lower; cow stuff steady; choice to prime steers \$10.50@11.25; fair to good \$10@10.50; plain to coarse \$8.75@9.50; prime yearlings \$10.50@10.75; best handy steers \$10@10.50; fair to good kinds \$9@9.50; handy steers and mixed heifers \$8.50@9.25; light butcher steers \$8@8.50; western heifers \$7.25@8.25; best fat cows \$7.50@8.50; butchering cows \$6.25@6.75; cutters \$5.50@6; canners \$4.50@5; fancy bulls \$8.25@9; butchering bulls \$7.25@8; common bulls \$6@6.50; best feeders \$7.50@8; best stockers \$7@7.50; light common \$5.50@6; milkers and springers \$6@11.00.

Hogs.—Receipts 65 cars; market

steady; medium and heavy \$12.85@12.90; yorkers \$12@12.80; pigs and lights \$10.75@11.10.

Sheep and Lambs.—Receipts 25 cars; steady; top lambs \$15.25@15.50; yearlings \$2.3@14.50; wethers \$12@12.75; ewes \$11@11.50.

Calves.—Receipts 600; market 50c lower; tops \$15; fair to good \$13@14; fed calves \$6@7.

Chicago.

February 19, 1917.

Cattle. Hogs. Sheep. Receipts today.. 26,000 70,000 22,000 Same day 1916.. 17,795 57,266 17,152 Last week..... 56,846 234,655 71,163 Same wk 1916.. 40,621 251,528 76,134

The cattle trade opened late today with large offerings, and the prevailing belief was that aside from the better class, prices would be 10@15c lower, if not more, with the slow demand from packers. The receipts of hogs were liberal and embraced about 8,000 head consigned direct to packers. The best hogs sold again at \$12.50, but the sales were largely a nickel lower. Hogs received last week averaged 202 lbs. Lambs and sheep were steady, with the best lambs bringing \$14.60 and the best ewes \$11.85.

Cattle had reactions from higher prices at times during the last week, but the week was one of extremely high prices for most offerings, even if the extreme prices for prime heavy beefs seen a week earlier were not paid. The greater part of the beef steers found buyers at a range of \$9.50@11.25, with the best grade of long-fed heavy steers that had been fed plenty of corn bringing \$11.50@12, while a class of steers called good sold at \$10.75@11.45. Medium grade steers sold at \$10@10.70, fair light weight steers selling at \$8 and upward and a limited number of inferior little steers taken as low as \$6.75@7.90. Yearlings were good sellers if in the least desirable, and even others sold far higher than during former years, the less attractive lots going at \$8.50@9.50, while the choicer kinds found a good outlet at \$10@11.75. Butchering cattle were unusually high, although weakening later, with sales at the best time at \$6.20@10 for cows and at \$6@10.50 for heifers; while cutters sold at \$5.65@6.15, canners at \$4.75@5.60 and bulls at \$6.25@9.85. Calves were in good demand at the best time of the week, with sales made all the way from \$6.50@8 for the heavier offerings up to \$12@14.50 for light weight vealers. There was a marked improvement in the country demand for stockers and feeders, and prices averaged decidedly higher, especially for the better class of these cattle, stockers selling at \$6.25@8.75, and choice yearlings going the highest. Feeders were in active demand at \$7.50@9.30, but not a great many sold anywhere near the top figures. Good feeding heifers had an outlet at \$6.50@8, while feeding cows brought \$6.25@6.60. Not only was there a scarcity of prime beef steer cattle, but the best cows and heifers were in extremely small supply. During the latter part of the week cattle prices were largely 15@25c lower than a week earlier, and the best calves brought \$13.50.

Hogs did not fail last week to come up to expectations in advancing to a fresh high record, and when prime heavy selected butcher hogs sold at \$12.60 per 100 lbs., that price was higher than was ever paid in the history of the market. With increasing receipts, however, and eastern shippers at times unable, owing to the scarcity of cars, to operate freely, the prices later reacted after an early bulge in the face of enormous Monday receipts. On the whole, the week was a remarkably good one for sellers; and the greater part of the daily offerings sold rather close together, average grading being good. The bulk of the hogs sold within a range of 25c, and prime light shipping hogs sold within 15c of the top prices, the latter being paid for prime heavies. Cattle, hog and sheep and lamb receipts last week were much larger than for the previous week, and hog prices weakened some, closing on Saturday at \$11.55@12.20 for light bacon lots; \$12.05@12.35 for heavy packers; \$12.25@12.30 for light shipping lots; \$12.35@12.50 for heavy shippers and \$8.75@11.35 for pigs, according to weight, the best pigs weighing up to 135 lbs.

Lambs, yearlings, wethers and ewes did the accustomed thing last week, all of the best flocks selling at new high records. Such prices were never chronicled in former years, and sellers had every reason to be highly pleased. Western fed lambs made up the great bulk of the daily offerings, and there was a substantial gain in the receipts of Colorado lambs, with too large a percentage of not well finished Colorado. Feeding lambs were in the usual demand, notwithstanding their advanced prices. Lambs closed firm at \$12.50@14.65, after selling early in

the week at \$15, and feeding lambs closed at \$12@14. Yearlings closed at \$11.25@14, being 10@25c higher than a week earlier. Wethers advanced 10@15c; selling at \$11.25@12.10, and ewes advanced 50@75c, selling at \$7@11.85; bucks advanced 50c, with sales at \$9@10.50.

Horses were in extraordinarily meager supply last week and in unusually light demand for shipment to the allied countries at the prices lately paid, riders being salable at \$120 and artillery horses at \$150@160. Inferior to fair animals moved slowly at \$60@100, with drivers salable at \$100@200, drafters at \$185@285 and mules at \$75@275. The local and shipping demand was only fair.

LIVE STOCK NEWS.

Increasing threatening complications with Germany have made exporters nervous as to the near future, and it is generally feared that our previous enormous and wholly unparalleled exports of meats to European ports are destined to be seriously disturbed by war against them made by the German submarines. As yet, however, our live stock markets have been ruling extremely high, with late high record prices for cattle, hogs, lambs, yearlings, wethers and ewes. In spite of our trouble with Germany, there is every reason to think that it will continue to pay handsomely to produce fat live stock.

Fresh and cured hog products have been in enormous demand for a long period, but German threats of attacking ships of this and other neutral countries have begun to make themselves felt. During a recent week exports of lard from Atlantic ports aggregated only 2,861,000 lbs., comparing with 9,212,000 lbs. a year ago; and of bacon only 6,166,000 lbs., comparing with 15,259,000 lbs. last year.

The Chicago market for stocker and feeder cattle varies a good deal from week to week, material advances and as large declines taking place from time to time; although the undertone of the market has become much firmer than was the rule not so many weeks ago.

Recent receipts of hogs in the Chicago stock yards have averaged 203 lbs., or the same average weight as that of a year ago, comparing with 223 lbs. two years ago and 225 lbs. three years ago. Never in the history of the trade have hogs brought such liberal profits to their owners as they have done of late, and it is no wonder that so many farmers have made arrangements for as big a spring pig crop as possible. Breeders are reported as in prime condition, and losses of hogs from cholera for the last year were extremely small. It is generally expected that there will be a substantial increase in the coming spring pig crop, but the requirements will be so large that there might be an increase of from 10 to 15 per cent without in the least exceeding the requirements of the packing interests. Ever since the price of corn in feeding districts soared to around a dollar a bushel there has been a distinct disinclination upon the part of the stockmen in the hog industry to engage in long feeding, and this explains why the recent receipts of hogs in the Chicago market have averaged but 203 lbs. or the same as a year ago, comparing with 223 lbs. two years ago and 225 lbs. three years ago. Hogs weighing up well have for a long time been in especially strong local and shipping demand, selling at the highest prices, but more recently prime light hogs have sold closer to the best heavies.

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DETROIT LIVE STOCK MARKET.

Thursday's Market.

February 22, 1917.

Cattle.

Receipts 2057. Receipts in all departments at the local stock yards this week were very light and fairly good service was given by the railroads.

The cattle trade was active and cow grades and bulls were full steady with last week; all others were 15@25c lower. Quite a bunch was bought by Boston buyers, eight or ten loads going to this point...

No demand for stockers and feeders. The close was steady as follows: Best heavy steers \$10@10.25; best handy weight butcher steers \$8@9; mixed steers and heifers \$7.50@8.75...

Bishop, B. & H. sold Bresnahan 10 cows av 886 at \$5.25, 1 do wgh 970 at \$5; to Sullivan P. Co. 3 steers av 933 at \$8.50, 10 do av 995 at \$8.40; to Brighton D. M. Co. 1 bull wgh 1180 at \$6.50, 1 do wgh 1240 at \$7.50, 4 steers av 1145 at \$9.50, 1 cow wgh 940 at \$6.50, 1 do wgh 900 at \$5.50, 1 steer wgh 1430 at \$10; to Mich. B. Co. 20 steers av 885 at \$8.25, 3 do av 823 at \$7.4 cows av 550 at \$5.75; to Sullivan P. Co. 9 butchers av 1050 at \$8.25, 2 steers av 1020 at \$9.25, 3 do av 850 at \$8.50, 8 cows av 1075 at \$6.25, 1 bull wgh 890 at \$6.50, 6 cows av 900 at \$5.25, 1 bull wgh 1100 at \$7.25, 4 cows av 800 at \$6.25, 2 do av 1105 at \$7.5 do av 850 at \$5.75, 1 steer wgh 1210 at \$9.25, 6 cows av 1000 at \$6.75; to Mich. B. Co. 15 butchers av 925 at \$8, 2 steers av 1210 at \$9, 2 cows av 830 at \$6.50, 1 bull wgh 1340 at \$7.50; to Hammond S. & Co. 28 steers av 1120 at \$10, 5 cows av 750 at \$5; to Goose 3 butchers av 680 at \$6; to Thompson 11 do av 980 at \$8.75; to Mason B. Co. 1 bull wgh 1530 at \$7.75; to Parker, W. & Co. 2 do av 970 at \$7, 1 do wgh 1300 at \$7.50; to Bresnahan 14 cows av 1000 at \$6.25.

Erwin, S. & J. sold Sullivan P. Co. 6 butchers av 770 at \$7, 7 steers av 906 at \$8.50; to Bresnahan 7 cows av 927 at \$5, 4 do av 1260 at \$7, 3 do av 963 at \$6; to Kamman 4 butchers av 695 at \$6.75, 1 heifer wgh 510 at \$6.25; to Hammond, S. & Co. 3 steers av 947 at \$8.10, 12 do av 991 at \$9.25, 1 do wgh 810 at \$8, 1 bull wgh 1110 at \$7; to Newton B. Co. 1 do wgh 990 at \$7, 8 butchers av 625 at \$6.50; to Brighton D. M. Co. 2 cows av 1090 at \$7.25, 3 do av 1073 at \$7, 3 do av 753 at \$5, 4 do av 1165 at \$7, 4 do av 912 at \$5.25; to Mich. B. Co. 5 steers av 850 at \$8.70; to Sullivan P. Co. 3 butchers av 900 at \$7.50, 3 cows av 980 at \$5, 3 do av 1080 at \$6.25.

Veal Calves.

Receipts 736. The veal calf trade was 50c per cwt. lower than at the same period a week ago; a few very fancy brought \$14 but the bulk of the good was at \$12@13.50; heavy \$6@8.50; the close was dull at the decline.

Sandel, S. B. & G. sold Thompson 3 av 120 at \$13, 4 av 125 at \$9, 6 av 135 at \$13.25, 6 av 155 at \$12.50, 2 av 110 at \$12; to Newton B. Co. 1 wgh 170 at \$12.50.

Erwin, S. & J. sold Sullivan P. Co. 3 av 107 at \$11, 10 av 190 at \$5.50; to Newton B. Co. 3 av 165 at \$13.50, 2 av 160 at \$10.

Sheep and Lambs.

Receipts 4216. The sheep and lamb trade held full steady with last week on all grades, top lambs bringing \$14.50; the quality was hardly as good as usual but everything cleaned up early as follows: Best lambs \$14.50; fair do \$13.50@14.25; light to common lambs \$12@12.50; fair to good sheep \$9@10.25; culls and common \$7@7.75.

Sandel, S. B. & G. sold Sullivan P. Co. 94 lambs av 65 at \$14, 28 do av 75 at \$14.25, 3 bucks av 185 at \$9, 7 sheep av 110 at \$8.50, 15 yearlings av 120 at \$11; to Thompson 99 lambs av 68 at \$14.35; to Parker, W. & Co. 10 sheep av 140 at \$10.50, 18 do av 100 at \$8.75, 14 do av 85 at \$8.75, 3 do av 135 at \$10.25, 10 do av 121 at \$10.25, 2 lambs av 110 at \$14.50; to Thompson 68 do av 90 at \$14.15, 9 do av 75 at \$14.35.

Hogs.

Receipts 3083. The hog trade on Thursday was steady with Wednesday, pigs selling at \$10.75@11; mixed hogs at \$12.25@12.75. This is 35c higher than last Thursday on good hogs and 25@40c lower on pigs.

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"Lays and Lays Profitably" Vigor—Egg Production—Longevity. 1000 selected hens as breeders on free range. Hatching Eggs \$2.00—15, \$10.00 per 100. Baby Chicks \$3.00—15, \$18.00 per 100. Fertilized eggs—full count and safe arrival of chicks guaranteed. CAVANAGH POULTRY FARMS 30 years Experience—Insures Quality. Route 3, Lansing, Michigan, U. S. A.

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Eggs and Day Old Chicks The Colony of Yearling Hens from which we offer Eggs and Day-Old Chicks, produced Pullets in 1916 hatched in April that began laying in September; in December 40 per cent of this Colony of Pullets were laying. Will you write to us for further description of this Winter-Egg poultry stock adapted to natural and convenient farmer treatment? Anything unsatisfactory to the customer in either Eggs or Chicks, will be made good immediately. Do you want advice on "Success with the Practical Hen"? Homestead Farms, Bloomingdale, Mich.

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Baby Chicks, Eggs for Hatching "Bred-to-lay" strain, vigorous, healthy stock, all bred by Missouri Experiment Station males with pedigrees of 20 to 274 eggs in one year. Chicks: \$25 for 100, \$100 for 500. Eggs for hatching, \$10 for 100. Thousands of satisfied customers. Book your order at once for eggs for hatching and baby chicks of quality. We sell Magic Brooders, best brooders made, \$18.50 each, capacity 300 to 500 chicks. Catalogue, Michigan Poultry Farm, Lansing, Mich. "Michigan's Largest Poultry Farm."

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LAYBLT S. C. W. Leghorns, large, great layers, pure white. No more—no less. Selected hatching eggs. Strong day-old chicks. Everfresh Egg Farm, Ionia, Mich.

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Plymouth Rock Cockerels—Barred, White and Partridge. Pure bred. Sheridan Poultry Yards, Sheridan, Mich.

RHODE ISLAND REDS and PLYMOUTH ROCKS Males 5 to 12 lbs. according to age \$2 to \$5; F. H. hens weight 5 to 10 lbs., eggs 15 for \$1.00, 100, \$5; 120, \$6. Mammoth Bronze Tom Turkeys, 8 to 28 lbs. according to age \$8 to \$25, 10 eggs \$3. A. E. Cramton, Vassar, Mich.

ROSE Comb Red's exclusively sixty large dark cherry Red, breeding cockerel, price \$2 and \$3. Write for egg prices. Ridgman Red Farm, R. 4, Vassar, Mich.

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Hot-water—Double-walled—Copper Tank—Self-Regulating. The Prize Winning World's Champion Model—same as used by Uncle Sam—leading Agr'l Colleges—America's most Successful Poultry Raisers. When ordered with my \$4.85 World Famous Hot-water Double-walled 140-chick Brooder, both cost only \$12.50.

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You can also share in my \$1000 Cash Prizes to customers—conditions easy to get Biggest Prize, order now—the earlier you start, the better your chance to share in the Gold—anyway write today for my big Free Book. Jim Rohan, Pres. Belle City Incubator Co., Box 14 Racine, Wis.

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of irrigated and non-irrigated land, sub-divided into 40, 80 and 160 acre tracts, in the Beaverhead Valley, Montana, are being sold on long time and easy payments. Soil very rich and suitable for diversified farming, live-stock raising, dairying, etc. Excellent markets. Let me tell you about it. Authentic information absolutely FREE.

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Tells how American Citizens 18 or over can qualify for U. S. positions paying \$75 to \$150 monthly to begin with. Unlimited possibilities for advancement. Easy work. Short hours. Sure vacations with full pay. No strikes. Lifetime positions. Ordinary education sufficient. WRITE! Don't be content with poor-paying, unexciting job when Uncle Sam offers you steady, well paying position in Railway Mail Service, Post Office, Custom House or at Panama Canal. Let former U. S. Civil Service Secretary prepare you for examination. Write for beautiful book—FREE. PATTERSON CIVIL SERVICE SCHOOL, 232 News Building, Rochester, New York

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This 136-Egg Incubator and Brooder shipped anywhere on 30 days' trial. No money down—no deposit. \$10.45 Pays for BOTH if Satisfactory When Tested. No other such open liberal offer as this, because no other outfit equals the UNITED Incubator hot water, Brooder hot air. Both sterilized iron. Satisfaction guaranteed. We take all the risk. Cash with order both \$9.95. THE UNITED FACTORIES CO., Box 431 Cleveland, O.

64 BREEDS Valuable New Poultry Book Free—108 pages. Fine pure-bred chickens, ducks, geese and turkeys. Choice, hardy, Northern raised. Fowls, eggs and incubators at low prices. America's greatest poultry farm. 24th year in business. Write today for Free Book. R. F. NEUBERT CO., Box 817, Mankato, Minn.

S. C. W. Leghorn Eggs for Hatching, also breeding stock. If you want Leghorns that will lay and win write us. "Hill-Crest Poultry Farm," Ypsilanti, Mich.

S. C. BUFF ORPINGTONS Bred for Heavy Laying 16 years—My Strain World's Greatest Egg Producers. Eggs and Chicks. Cir. Free. Will Schadt, Box 1087, Goshen, Indiana.

Silver Golden and White Wyandottes. 20 white cockerels at \$2 each. 10 Golden cockerels at \$2.50 each. C. W. BROWNING, R. 2, Portland, Michigan

White Wyandotte Cockerels Strong, vigorous birds \$2.50, \$3.00 and \$3.50. EGGADAY RANCH, Marshall, Mich.

White Wyandottes cocks and cockerels snow white from fine stock and A 1 layers, \$2, \$3, and \$5 each. DAVID RAY, 202 Forest Ave., Ypsilanti, Michigan.

Mammoth White Holland Turkeys. Order now, going fast. Belgian Hares America's coming meat. get started. Circulars Free. Stamp appreciated. Riverview Farm, Vassar, Mich., Route 2, Box 10.

Economical Egg Production

WITH eggs selling at from forty to fifty cents per dozen, there is furnished some food for reflection and due consideration.

Not nearly enough eggs are produced on the farms, the ideal place for egg production. With the free farm range, the natural instincts of the hen are met and the highest individual egg production is obtained with a little sensible help from the keeper.

Any farm of forty acres or more should provide a run for at least 125 hens, which number is about seventy in excess of the total kept on the average farm.

Under ordinary conditions, a very large proportion of all the food consumed during the open season from April to December we will say, is a free meal ticket. Even in the winter time there are many ways that much of the feed for the hens can be provided for from otherwise wasted feed. Where the hens can get at the straw stack, or the straw stored in the barn there are multitudes of weed seed, in addition to the grains wasted threshing time, that the hen gets, as well as much of the roughage they also will pick up.

Practical Economical Feeding. One fact that acts against the keeping of larger flocks, is the very high price of all grains, bringing up the old claim that the layers "eat their heads off." There is no doubt where good clean grain is fed exclusively, at the present high prices, that this may occur. So we must try and find as much cheaper feed as possible.

A flock of hens running about the farm do but little damage, in fact, they do more good in consuming a large number of bugs than any harm they do in the little they may dig up of crops.

Among the cheap foods I include the sunflower. I have had very satisfactory results from planting the mammoth varieties along the fences and out of the way corners. They have cost practically nothing to raise, occupied no valuable land to speak of, and have furnished a whole lot of feed, both as they ripen and drop for the hens to pick up themselves, and also the later crop can be harvested and threshed like any other grain crop, and kept for winter feed. I assure you the layers will not let any sunflower seed go to waste when it is thrown to them.

Sunflowers Good for Poultry. It is surprising what a big yield can be secured from a small patch of sunflowers, and they are the easiest things in the world to handle for the winter feed. They should not be sown until early in June, or even later. Care should be taken to harvest them before they get too ripe as they shell very readily. Where you have lots of store room which is dry, it is not necessary to thresh them at all, just cut off the flower heads, and store, then all you have to do, is to feed them just as they are to the flock.

Some complain that their hens will not eat them. Of course, they do not make a complete food and where hens are fully fed, or over-fed, they will not eat them readily. I wish to say right here that I consider any flock that refuses to eat sunflower seeds as being over-fed and not profitably fed at that. That is one of the greatest faults of many farmers, they throw out corn until the hens refuse to clean it up, that being about their only gauge as to the requirement of their flock.

Now I wish to make this as a positive statement, that hens will eat from twice to four times as much, as it is profitable to feed them, or that they require, for anything but fattening purposes.

How Much Grain Should we Feed? An ordinary handful of grain is enough for a ration, and two rations per day are sufficient. If you want to

know what your flock can get along very nicely with, throw as many handfuls of dry grain into a measure as you have hens and you will have a good and sufficient feed for your flock. This overfeeding has been largely the cause of the undersized flocks kept, and is caused by common ignorance of a sufficient ration. If you doubt this, try it out yourself on a few of your hens and see if you cannot put your flock on a different basis of profit and loss.

Another very great source of food supply for the flock is clover, both in summer and winter. If you can have a patch of clover not too far from the farm buildings, the hens will pasture on this clover to a surprising extent. It makes one of the best green feeds known for layers, there being a large proportion of nitrogenous matter in it.

Even after the clover is cut the leaves and heads that have fallen from the stalks are greedily picked up by the hens. The chaff left from clover hay makes a mighty good roughage, to throw in to the flock. They will scratch it over and pick up a lot of feed and get a lot of needed exercise.

The Value of Straw and Chaff. There is hardly any grain crop harvested that does not contain in the straw and chaff an ocean of material for the hens' consumption, and we lose a whole lot when we do not make provision for utilizing it. Not only is the benefit secured in lessening the expense of feeding the hens, but it is keeping our farms free from weeds, for every weed seed picked up by the hen is one weed seed less to go out in manure, and grow into another weed to seed again.

Another great source of food supply for the flock running at large, is the animal food they pick up, such as bugs, grasshoppers, mice, and other insects and small animals. I do not think we always realize the amount of such things the chicken consumes, or the amount of good she does in doing so.

The more the hens pick up of their own keep, the less you will have to feed them of otherwise valuable food, and the greater the net profit. There are many ways of economizing on the keep of the flock, ways that just need a little common sense to apply.

Any farm that is not keeping the maximum number of laying hens loses just that much of its natural production. The farmer who buys his groceries, and many other little living necessities with the chicken money, does not have to dig into the returns from his main crops every time he needs a pound of sugar. This often explains why some farms pay so much better than others, why some farmers soon get out of debt, while it is a constant struggle with others to just make ends meet.

In conclusion, I wish to say that I believe that there is no one phase of farming that presents the possibility in the way of increased receipts with so little added expenditure as producing more eggs.

Isabella Co. W. J. COOPER.

PRACTICAL FEED HOPPER.

An efficient feed hopper for the farm flock can be made of scrap lumber or packing box material similar to the hopper illustrated in the photograph. The height of the hopper can be determined by the number of birds or the intervals when it can be conveniently filled. For a large flock a wider hopper is more desirable as it enables more birds to eat at the same time. The strip at the base of the hopper should be high enough to prevent the hens scratching out the material. A height of four inches will be satisfactory. A width of three inches between the base of the chute and the back of

the hopper will prevent the dry mash from clogging and falling to fall into the bottom where the birds can reach it. A hinged cover can easily be attached to this hopper and it can then be closed to keep out rats at night if there are rats on the premises. A hopper of the type illustrated will be satisfactory for holding dry mash for a

flock of fifty hens. It is four and a half feet high in the rear, three and a half feet in front, one and a half feet wide and one and a half feet deep. The hopper should be hooked to the side of the wall with a strong staple and it can be removed easily for cleaning or repairing.

Ingham Co. R. G. KIRBY.

A Schoolboy's Experience with Chickens

WHEN Mr. R. A. Turner, our agriculture teacher at Hillsdale High School required as a part of our work that each one of the class carry on an agricultural project at home, my mother offered to let me care for our flock of chickens.

She was to furnish all the feed and repairs that were needed. I was to do the planning, keep the records, do as much of the work as possible, and get one-fourth of the receipts. As I drive over four miles to school I could not do all the feeding and caring for them. The flock was mostly White Wyandottes but there were a few other hens of different kinds and twenty Barred Rocks, I had raised in the summer for a fancier.

The first thing I did was to take out all the hens which I thought were not good layers, using the Hogan system for judging them. I sold the poorer hens, and also the flock of young Barred Rocks, at market price, thus reducing the flock to sixty hens and seven roosters. I then improved the coop by changing the perches and making them removable, and making more ventilation.

I made a feed hopper for their dry mash, oyster shell and charcoal, and placed in the coop a box of fine coal ashes for the chickens to dust in.

On December 29 I went over the flock with a mixture of equal parts of blue ointment and vaseline, putting a little under each wing, and under the vent. This was to kill the lice and mites on the birds. The amount used on each one was about the size of a pea.

I suppose my success is not remarkable, yet we have gotten more eggs than we ever have before in the winter. I am sure that one reason my hens do so well is because they are fed regularly and the coop is kept clean. Every Saturday I give it a thorough cleaning and put in a deep litter of straw. Generally I add more litter in the middle of the week.

It is much easier to take care of your chickens if they are tame. Mine are all pets. When we go into the coop they do not fly around. They will eat from our hands, and do not mind if we lift them off from the nest to see if there are any eggs under them.

When it became settled winter weather I shut them into the coop, which is large enough so they have room to scratch. I feed in the morning a whole grain mixture composed of sixty pounds of wheat, sixty pounds of corn and thirty pounds of oats, scattered in the litter of straw. About noon I feed vegetables of some kind, mostly beets and carrots cut up, and about a gallon of sour milk. At four o'clock I feed ear corn chopped into small pieces.

The chickens have warm water and a ground dry mash before them all through the day. This mash is composed of corn meal, wheat middlings, wheat bran, oat meal and alfalfa meal.

Many of our neighbors who are getting few, if any, eggs, say that I do not get eggs enough to pay for the feed they eat. That this is not so is shown by the following figures dating from November 1 to February 1:

Cost for Three Months.	
Whole grain, mixed.....	\$ 9.95
Ear corn	7.25
Oyster shell10
Charcoal15
Ground dry mash	5.71
Vegetables50
Total	\$23.66

Income for Three Months.	
Total chickens (dressed).....	\$ 9.53
Total chickens (live).....	20.49
Total eggs (65 1/2c dozen).....	26.20
Total income	\$56.22
Total cost	23.66

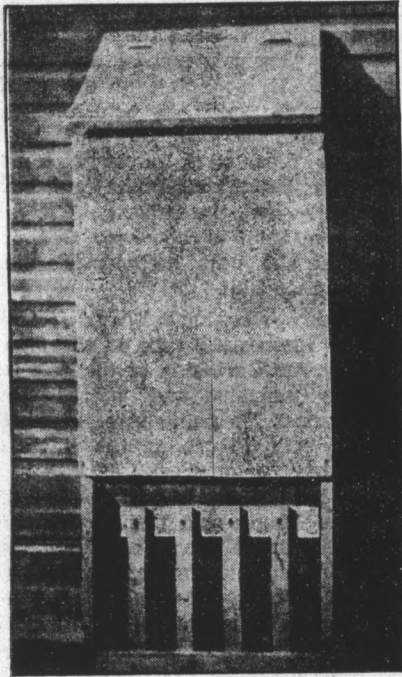
Net profit

My share, one-fourth of \$56.22, \$14.05

I did not sell my young chickens until December 9, so that my feed bill per week for the first six weeks was more than it is now.

The eggs alone have more than paid for their keep and I am getting more all of the time. Part of the pullets were late-hatched and do not yet lay. Last winter it cost nearly as much to keep the hens, and we got very few eggs. I think the care and the milk and the dry mash have made the difference.

It pays to keep records of your chickens and know what they are doing.



Feed Hopper for Fifty Hens.

ing, instead of just guessing. I like the work and I think the poultry business is a good one for a school boy. Hillsdale Co. HARRY DIMMERS.

EGGS FOR HATCHING.

It is seldom necessary and never desirable to use eggs for hatching from all of the fowls on the farm. A sufficient number of the choicest fowls should be selected for use as breeders. The breeding fowls may be separated from the main flock two or three weeks before it is necessary to begin to save eggs for hatching. They should be housed in a temporary pen and yarded at one end of the regular poultry house or in portable colony houses and returned to the main flock as soon as the breeding season is over.

No matter how carefully the breeding stock has been selected, it will usually be found advisable to make a careful selection of the eggs to be incubated, basing the selection on their size, shape, color, condition of shell and uniformity. The first three of these characters are hereditary and a careful selection of eggs of good size, shape, and color continued through several generations will result in greatly improving the average quality of the eggs produced by the flock.

Buy good strong colonies of bees in hives with straight combs. These should be secured from someone known to be reliable and experienced.

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.

Both Machines \$10

Freight Paid For Only

130 EGGS

Made of California Redwood

130 CHICKS

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

MONEY BACK IF NOT SATISFIED

10-YEAR GUARANTEE

180 Egg Incubator and 180 Chick Brooder both for only \$12.75

Wisconsins have hot water heat, double walls, air space between 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 1917 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 104 Racine, Wis.

Ironclad Wins in the Two BIGGEST HATCHING Contests Ever Held

Why take chances with untried machines when for only \$11 we guarantee to deliver safely, all freight charges paid (East of Rockies) BOTH of these big prize winning machines fully equipped, set up ready for use? Why not own an Ironclad—the incubator that has for two years in succession won in the greatest hatching contests ever held. In the last contest conducted by Missouri Valley farmer and Nebraska Farm Journal, 2000 machines were entered, including practically every machine we offer with Brooder, freight paid, for only \$11. Mrs. C. F. Merrick, Lockney, Texas, hatched 148 chicks from 148 eggs in the last contest.

Both for \$11

Freight Paid East of Rockies

30 DAYS' FREE TRIAL Money back if not satisfied.

MADE OF CALIFORNIA REDWOOD

150 Chick Brooder

IRONCLAD INCUBATOR COMPANY, Box 117, RACINE, WIS.

109 Chicks From 118 Fertile Eggs

"My first X-Ray hatch is 109 fine, sturdy chicks from 118 fertile eggs." MRS. J. B. WERNETTE, Remus, Mich.

Learn why the 1917 X-Ray Incubator is the greatest incubator ever created. Five New 1917 Innovations—the new X-Ray Egg Tester, the new X-Ray Nursery Tray, the new X-Ray Gas Arrestor, the new Quick-Cooling Egg Tray and the new Handy Height design at no increase in price.

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Completely hatches on one gallon of oil (one filling). Fill the tank, light the lamp, and you are through. Duplex Central Heating Plant—directly underneath, furnishes natural, moist Mother Hen Heat. X-Ray Automatic Trip regulates the flame—no cold corners—no overheated sides. Express prepaid to practically all points. Write Right Now for Free 1917 Book.

X-RAY INCUBATOR CO. Des Moines, Iowa

Express Prepaid

Cast Iron CANDEE

Lost 2 Out of 500 Chicks

"I have about 500 chicks with my Candee Brooder. Some are ten weeks older than others. I have lost only 2 so far and the rest are doing nicely, although my building is only 10 x 12, which is a little small for that size flock." H. H. KREH, Pigeon, Mich. March 22, 1916.

Write for big illustrated catalog that gives the experience of many Candee operators. Tells about the coal-burning brooder automatically regulated. Big, roomy hovers. Shipment same day order is received.

W. A. SCHLEIT MANUFACTURING CO., Inc. Dept. M, Eastwood, N. Y. Licensees Candee Incubator & Brooder Co.

Saves Chicks

Burns Coal Broods up to 500 Chicks in One Flock

LEGUME SEEDS

Soy Beans, Field Beans, Field Peas, Cow Peas, Clovers, Alfalfa, Vetches, also Seed Oats and Corn.

Edw. E. EVANS, West Branch, Mich.

SIX ACRES—TWO DOLLARS

N. A. C. Inoculating Bacteria for alfalfa, soy beans, cow peas, vetch, and all legumes. Guaranteed highest virility. None better at four times the price. One acre 50 cents, six acres \$2. Why pay more? Also full line of fertilizer materials for home mixing. Spray materials too. Write us. Nitrate Agencies Company, 451 Central National Bank Bldg., Columbus, Ohio.

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THE ANNUAL HESPERIA MEETING.

In spite of the fierce blizzard that was raging, the silver jubilee of the Hesperia movement was royally celebrated, beginning Thursday night and lasting until Saturday night. Many of those who witnessed the foundation of the movement were present and were as enthusiastic as ever.

The Hesperia orchestra was at its best and favored the meeting with a number of excellent selections.

"Lincoln and His Times," was the theme of the address by Hon. Addison G. Proctor, of St. Joseph, whose words were especially interesting owing to the fact that the speaker was nearly eighty years of age and that he was the youngest delegate at the Chicago convention that nominated Lincoln to the presidency. He recalled the inside workings of the great convention, telling how the great Lincoln was nominated over the heads of so many eminent men who were trying for the honor.

The speaker spoke of Horace Greeley, Seward and others who were at the height of their influence and popularity at that time. Then he vividly pictured the band of southern mountaineers headed by Cassius Clay. These men attended the convention for a purpose and told in their uncouth way why Lincoln should be nominated. The speaker declared the situation was created by a great moral upheaval, but that the nomination of the great commoner caused more anxiety at the time than enthusiasm.

On Friday morning there was community singing led by Miss Minnie Reynolds.

Mrs. M. B. Ferry, curator of the Michigan Pioneer and Historical Society of Lansing, declared that Michigan has sadly neglected the duty of honoring its pioneers. She spoke with enthusiasm of the great hospitality shown by the early settlers and credited them with laying the foundation of our present great commonwealth.

In speaking of allegiance to the flag, Mrs. Ferry said every foreigner should be shown the flag of the Union when he takes the oath of allegiance and explained what it meant to become a citizen of the United States.

Mrs. Ferry urged the schools to keep up and increase their interest in the work of honoring the memory of the pioneers and in showing appreciation for their work. She closed her talk with a strong illustration of the debt of gratitude we owe the early pioneer and said that we should honor their memory.

Prof. Maybe, of the State Normal School, Kalamazoo, took charge of the community singing and showed himself an able leader.

Prof. T. Leo Sharfman, Department of Economics, U. of M., gave an interesting address on the "Railroad and the Public." He said the railroads do not discuss the duties they owe to the public, and the public does not realize what the railroads have to contend with. He gave statistics showing the miles of railroad in the United States, number of people employed, what it cost, number of passengers yearly, and made the statement that freight rates were lower here than in Europe and passenger rates higher. He said that the United States had given to the railroads more land than is contained in the German Empire. He also stated the public ought to rely on a body made up of experts for railway regulation instead of legislatures. Lack of

public co-operative regulation or excessive regulation is bound to defeat its own ends and will ultimately lead to public ownership.

Miss Helen M. Bennett, manager of Chicago Collegiate Bureau of Occupations, addressed the audience with "The Vocational vs. the Cultural Education." She stated that in order for a person to make a good living a college education was not necessary, but that one must know some one thing well. A boy needs more training than his father because conditions have changed. Vocational training is to train a person well enough so that a person may be able to make a living.

"Fiddles and Fortunes" was an able address given by Thornton Mills, of Battle Creek. Mr. Mills has never played a fiddle and never had a fortune. He described the Italian village where the Strad violin was made and the little boy sitting on his bench when his feet did not reach the floor. He made fiddles until he was ninety years old and today some of those fiddles could not be bought for several hundred thousand dollars. He said a man's work was born with him. If you work for what there is in it you are too mean to live, your heart grows smaller. If you have the right kind of spirit your burden is never heavy. There is not a thing on earth that will satisfy a human soul. When you get what you want you don't want it. The world is a gymnasium for the development of physical, mental and moral qualities. In speaking of the shirk, and the right spirit, he said knocking the boss and watching the clock, more money and less work, never got a man anywhere, but the kind that don't have a strike to get the raise gets it and there is no limit to the raise. God cannot make the best without the best man to help him.

Saturday morning Frank Gerber gave an interesting talk on the sheep industry. Mr. Gerber is of the Fremont Canning Company, and stated that their reason for going into the sheep industry was to use up the waste of the factory.

Miss Bennett again came before the audience when she delighted this time with "The Great Vocation." She named several things that might be great vocations. She went deeply into her subject, finally bringing to the surface that the great vocation is that in which you can do your best work and be happy. Most of us are very weak people and can't do the work we want to do. If you can't be an opera singer perhaps you can sing a lullaby, and who knows but that is the best work.

The Hesperia High School put on a cantata in charge of Miss Minnie Reynolds, that occupied the greater part of Saturday afternoon and was the finest thing the high school has ever done.

Prof. R. W. Higher, U. of M., gave an illustrated address on "Michigan Bird Life," which was very fine and everyone enjoyed it.

Saturday evening Mrs. Mary Robertson, chairman of the committee on resolutions, gave a brief history of the Hesperia Movement, and read resolutions on the death of its founder, D. E. McClure.

The Hawaiian Singers and Players entertained the monster meeting, singing their native songs, playing their native instruments and dancing their native dances. They held their audience spellbound for nearly two hours. Everyone was delighted and pronounced it the finest concert the big meeting ever put up to the public.

Thus ended the twenty-fifth meeting and great credit was given the management for the magnificent program.

At the business meeting on Saturday morning the following officers were elected: President, John Mahan; vice-president, Leslie Goodrich; secretary, Isabelle M. Becker; treasurer, Archie McCallum.

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Farmers' Clubs

BENEFITS OF THE STATE ASSOCIATION.

Address by Ex-Associational President I. R. Waterbury, at the recent annual meeting of the Michigan State Association of Farmers' Clubs.

In speaking of the benefits of this State Association it would perhaps be well to divide the subject into two, if not three, phases. First, what have been the benefits from this organization which have been reaped by the local Clubs and the state itself during the more than a score of years since its organization. There have, I believe, been very many benefits. Greatest of all is the benefit that has accrued to those who have had the privilege or the pleasure of participating in this annual meeting. There is perhaps no single influence that will broaden the viewpoint of any man to such an extent as to meet in a conference of this kind with other men interested in the same things in which he is interested but coming from different sections of the state and having, if you please, somewhat different angles of vision on the questions which are brought up for discussion. Then the personal contact which is brought about at a meeting of this kind, the making of new acquaintances, the renewing the old ones, the opportunity of mingling in a social way as well as a business way is of great value to those whose privilege it is to participate in a meeting of this kind. I believe that it is with a view to this fact that most of the local Clubs in the state have adopted the practice of passing around to the different members the privilege of coming to this meeting and the local organizations have participated perhaps to a larger extent in the benefits of the organization than had been the case had some other policy of representation been adopted.

We may then consider this as one of the primary benefits which have accrued to the Club movement and to the Club membership as a whole through this State Organization of Farmers' Clubs during the twenty-three or twenty-four years in which it has been in existence. Another benefit which has been derived is the publicity which has been given to the Farmers' Club movement in the state through the meeting of the State Association of Farmers' Clubs. The Farmers' Club organization of Michigan has become known far and wide. From Maine on the east, to Minnesota on the west, inquiries have from time to time come to the officers of this organization and those who have had to do with this publicity department, with regard to the plan of organization and the work that is carried on by the State Association here, and last year Minnesota took steps to perfect a state organization of its local Clubs. I think it was at the last Minnesota State Fair that the final steps were taken to secure the organization. Notwithstanding this fact, there are in existence in Minnesota today a greater number of Farmers' Clubs than are existing in the state of Michigan.

That suggests that the State Association of Farmers' Clubs ought to be doing a more active work throughout other communities of the state which do not now enjoy the benefits of a local Farmers' Club. They don't like to "butt in;" they want to be invited in; they like to know that the latch-string is out; that they will be given a hospitable welcome in the organization as well as in a home or church or any other community proposition. Just a simple effort along this line, just an active committee maintained for the purpose of giving a little aid to the organization of a new Farmers' Club would, I believe, very greatly extend

the limits of the Club movement in the state. It would multiply perhaps by several times the number of active Clubs that are within the state. This might, if you please, be termed missionary work, but it is a good kind, it would be worth while. And I believe that a great opportunity lies before the State Organization of Farmers' Clubs in the future to do a little effective work of this kind.

(To be continued.)

CLUB DISCUSSIONS.

A Successful Club Institute.—The Farmers' Institute held at the Salem Town Hall, on Monday, February 5, was very well attended, the Farmers' Club being held in connection with it. Everything was in readiness and the ladies served the usual fine dinner and supper they always prepare for these occasions. The morning session opened with music by Mrs. Baker, invocation by Rev. J. Baker, and a recitation by Ione Bird. These were followed by a talk on "The Farm Garden," by Mr. Moore, the state speaker. He gave some very good ideas on the need and also the ways of planting and caring for the garden. He spoke particularly of the strawberry bed and its value to the farmer, suggesting the Dunlap as the best variety to plant, keeping the rows narrow by cultivation and covering them with manure or straw in winter. The music for the afternoon session was exceptionally fine and was given by a chorus of young men from Worden. The recitation given by Mrs. Walter Bowns, "Buying a Feeler," caused much merriment and the one given by I. R. Johnson, "There was a Crooked Man," showed man as never satisfied. "The Rational Principles of Seed Selection," was then taken up by Mr. Moore. He gave the farmers some excellent ideas of how to increase the yield by seed selection of wheat, oats, beans and potatoes. He said the seed should be selected from the field, not from the granary, only the best heads or hills should be taken and by so doing in a very short time a great increase in the yield per acre could be made. The discussion was led by Mr. Preston, county president, and showed the subject had been fully appreciated.

The evening session consisted of music by Mr. Ball and Rev. Carter, recitation by Mr. Preston and paper by Miss Grace Geiger, "What the Farm Offers the Farmer's Daughter." This paper showed the many things offered to the farmer's daughter who has energy and is ready and willing to work. The talk given by Mr. Moore on "The Great Rural Problem," was one that will long be remembered. The problem, he stated, was making the rural churches one and also making them the head of the rural districts as to the social life and amusements of our communities. Rev. Baker led the discussion and heartily endorsed what the speaker said, as did Rev. Carter. This institute was one of the best and most profitable, held here in many years, and it is hoped the president, Mr. C. R. Ross, may be able to hold another next year fully equal to this one.—Mrs. I. R. Johnson, Cor. Sec.

A "Valentine" Meeting.—The Wells-Dayton Farmers' Club held their February meeting on February 7 at the home of Mr. and Mrs. Stanley G. Stokes, of Dayton. In spite of the severe weather a good crowd was in attendance. Among the visitors present were Mr. and Mrs. Robert Garner, of Dayton, and Miss Funk, of S. E. Novesta Farmers' Club. A fine dinner was served under the direction of Mrs. C. Hunt. The ladies brought valentines which were cut into halves, one half was given to the men, the ladies keeping the other half. The men had to hunt the other half to their valentines and eat dinner with the lady. This lent novelty and amusement to the dinner hour. After dinner the meeting was called to order by President Stokes and the following program prepared by Mrs. M. Daily was carried out. Singing "Sunshine," by the Club, followed by all repeating together the Lord's Prayer. Business meeting. Mrs. Ross read a very good paper on the "High Cost of Living," stating as some of the chief causes, the shortage of crops, middlemen's profits, careless spending of money by the wives of the wage earners. Debate, "Resolved, that the automobile is more of a detriment than a benefit to the farmer." Affirmative S. G. Ross, negative A. L. Adams, negative side winning. After a fine musical and literary program had been rendered, the session closed by singing "Old Black Joe," by the Club. The next meeting of the Club will be held March 7, at the home of Mr. and Mrs. Clarence Harmon.—Mrs. Clarence Harmon, Cor. Sec.

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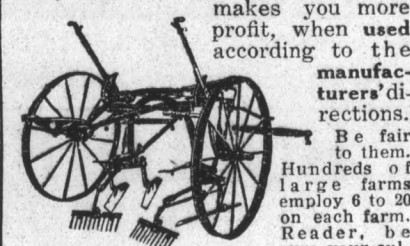
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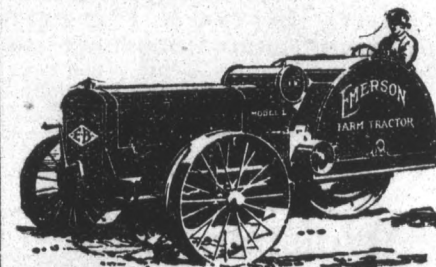


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Coldwater, Michigan.

GUERNSEYS For Sale

8 May Rose bulls, one 2 mo., one 12 mo. and one 8 years old. 9 grade cows and 11 grade heifers from 6 to 20 mo. old. JAY D. RUSSELL, R. 1, Gobleville, Michigan.

Guernsey Bulls of service age and calves from choice. Adv. reg. breeding. T. V. HICKS, Route 1, Battle Creek, Mich.

GUERNSEYS REGISTERED BULL CALVES Containing blood of world champions. HICKS' GUERNSEY FARM, Saginaw, W. S., Mich.

For Sale: At farmers prices, registered Guernsey bulls old enough for service, from advanced registered cows. L. J. Byers, Coldwater, Mich.

FOR SALE Registered Guernsey bulls and bull calves and Berkshire swine, the best breeding. John Ebel, R. 10, Holland, Mich.

FOR SALE: Registered Guernsey bulls of excellent breeding at grade prices. Loren H. Dygert, Alto, Michigan.

BARGAINS! NOW!!

Registered young Holstein Bulls at nearly half price. 15 of my famous blood strain

Must be Sold at Once.

Some ready for service. All in perfect condition. Act quick and get first choice—wire or write for illustrated booklet.

LONG BEACH FARM

AUGUSTA, - - MICHIGAN

Do You Want A Bull?

Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6 1/2 % fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

Extra Good Registered

Holstein Cows FOR SALE

From \$125.00 to \$200.00.

Send for list or look them over.

Bigelow's Holstein Farms, BREEDSVILLE, - - MICHIGAN

HOLSTEINS

Herd No. 1. Five cows, one two year old bull. Herd No. 2. Five yearling heifers, one yearling bull. Herd No. 3. Five Heifer calves and one bull. Bulls ready for service and 6 to 8 months old bulls. Prices will please you. If interested, write as soon as you read this. L. E. CONNELL, Fayette, Ohio.

"TOPNOTCH" Holsteins

By careful retention, for many years, of largest producing females, and use of superior sires, a breeding herd of wonderful quality has been established. We are selling young bulls of this "TOP NOTCH" quality, of serviceable age, at moderate prices. Information, pedigrees, etc., on application. McPHERSON FARMS CO., Howell, Michigan.

High Grade unregistered Holstein heifers that show breeding, priced to sell. Some fresh soon. B. B. REAVEY, Akron, Mich.

Reg. Holstein Bull. Dam first in Dairy test. Sire G. Champion Michigan State Fair. Price right. John A. Rinke, Warren, Mich.

CLOSING OUT SALE

OF THE

Dunkelberg Farm Guernseys

Wednesday, March 7, 1917

COMMENCING AT 10 O'CLOCK

Consisting of 50 head of Registered and 25 head of High Class Grades—Strong in the Glenwood and May Rose Blood Lines. Some very fine A. R. Cows with records of over 500 lbs. of Butter-fat. A number of especially good heifers sired by Glenwoods Champion No. 15639 and fine heifer calves by Roxies Glenwood of Broadhead No. 25288. The Sale will be held at Boch & Watson Sales Stable, 1001 Well Street, Fort Wayne, Ind. Col. D. L. Perry, Auctioneer.

For Catalogue, address C. A. Dunkelberg, 2401 Fairfield Ave., Fort Wayne, Ind.

BULLS FOR SALE CALLAM STOCK FARM, SAGINAW, MICH.

BREEDERS OF CHOICE

REGISTERED HOLSTEIN CATTLE

- (1) ALBAN FAYNE CALLAM, born November 14, 1916. More white than black. Large-straight and handsome. Official record of dam 18.57 lbs. butter, 414.7 lbs. milk 7 days. Dam has 3 A. R. O. daughters and is granddaughter of Lord Netherland De Kol. (2) NIG PONTIAC CALLAM, born September 26, 1916. More white than black. Royally bred, and perfect conformation. Dam is in the Advanced Registry and is one of our best cows. (3) KEKA DE KOL CALLAM, born December 10, 1916. More white than black. Very handsome youngster, choicely bred, and perfect in every way. Dam has not been tested, but is the daughter of Pet Fairmont De Kol, official record over 19 lbs. butter in 7 days. (4) PAUL DE KOL CALLAM, born December 23, 1916. About half white and half black. He is a splendid calf. His dam has an official record of 20.47 lbs. butter and 503.8 lbs. milk in 7 days. This calf is good enough to head any herd. These calves are all pure bred Holsteins, registered and of the choicest breeding and sired by the great King Keka Fayne, grandson of King Segis, Grace Fayne 2nd's Homestead, great grandson of Pontiac Korndyke, and sired by King Fayne Segis, sire of Segis Fayne Johanna, official record 50 lbs. of butter in 7 days, now champion cow of the world. Select one, and write for pedigree and price

CALLAM STOCK FARM, Room 204 Bearinger Bldg., Saginaw, Michigan

A GUERNSEY BULL

used in a grade herd in Ohio sired daughters that produced 50% more milk and 70% more butter fat as 2 year olds than did their dams when mature.

GUERNSEY MILK contains 5% Butter Fat

Write for our beautiful free booklets about Guernseys

THE AMERICAN GUERNSEY CATTLE CLUB BOX W.M., PETERBORO, N. H.



R. of M. JERSEY BULLS—THIS TIME! [R. of M.]

You keep cows for profit. Brookwater Farm breeds bulls that will increase value of every calf you raise. The following are sired by Benedictine King who will enter R. of M. this year on his record as a sire of R. of M. cows. Not one of his daughters ever failed to make the Register of Merit. Calved June 5, 1916. Solid color; dam, Brookwater Veda 25876, now on test, has made in 5 months and 21 days, 309.97 pounds of butter. Calved July 3, 1916. Solid color; dam, Brookwater Loretta 27195, now on test, has made in 4 months and 25 days, 360.72 pounds of butter. Also three other bull calves, one of which is of unusual promise by Majesty's Intense and out of a tested (will make 70 pounds fat during January) granddaughter of Loretta D., champion cow for production at the St. Louis World's Fair. One of these bulls we will sell at \$75. Others higher. Extended pedigrees and production records furnished on application. Let us know what kind of a bull you need. Visit the farm and see the calves, their dams and sires. BROOKWATER FARM, ANN ARBOR, MICHIGAN, H. W. Mumford, Owner. F. Foster, Manager.

Registered Holstein Friesian Heifers. 3 to 6 mos. old. Some from 30 lb. sires. Priced to sell. Fred J. Lange, Sebawaing, Mich.

Holstein Calves, 10 heifers, and 2 bulls 15-16ths pure. 15 weeks old, beautifully marked, \$20.00 each, crated for shipment anywhere. Edgewood Farm, Whitewater, Wis.

REG. HOLSTEINS: Herd headed by Albina Bonte Butcher Boy No. 83124. Dam's record at 6 yrs. butter 25.53 lbs. milk 619.4. Yearly record at 2 1/2 yrs. butter 82 lbs. milk 1822 lbs. W. B. READER, Howell, Mich.

Cluny Stock Farm 100 REGISTERED HOLSTEINS 100 Save Money! Buy Now! THE MILK AND BUTTER KIND

Bull calves by a sire whose 3 nearest dams average: Milk, 7 d. 658.2 lbs., Butter 30.618 lbs. His dam's record 31.766 lbs. butter in 7 days, as Jr. 4 yr. old. State record for age when made. Make a saving on Price and Express charges, and raise one of his sons for your next herd sire. Prices and Pedigrees on application. R. B. McPHERSON, HOWELL, MICH.

Holstein Bulls

1 to 9 months old. Dam's A. R. O. Our herd sire is Johanna McKinley Segis 3d. 7 nearest Dams average 27.25 BLISSVELDT FARMS, Jenison, Mich.

OAK LEAF FARM Herd Sire Ypsiland Sir Pletertje De Kol I have several young bulls for sale, good individuals and the kind that is a credit to head any herd at farmers' prices. E. H. Gearhart & Son, Marcellus, Mich., R. No. 4.

Registered Holsteins. Young bull ready for service. 30 lb. breeding. Satisfaction guaranteed. W. B. Jones and J. F. Lutz, Cohoctah, Mich.

A 26 LB. JR. 4-YR.-OLD

A 20 lb. Sr. 2-yr.-old and a 15 lb. Jr. 2-yr.-old were among the records recently made in our herd. All cows in the herd have creditable A. R. O. records and are tuberculin tested.

PEACELAND STOCK FARM, Three Rivers, Mich. Chas. Peters, Herdsman, C. L. Brody, Owner, Port Huron Mich.

REG. Holsteins. Place your order now for a bull calf. R. I have cows due to freshen soon, bred to the best bull in Mich. Elmer E. Smith, Redford, Michigan

Veterinary.

CONDUCTED BY W. C. FAIR, V. S.

We have a cow that appears perfectly healthy, is now giving ten quarts of milk daily, but after standing for 12 hours, becomes rather slimy. So far as I can tell her udder is all right, she has a good appetite and is fed a good quality of food. We have given her occasional doses of saltpetre. Mrs. C. F., Newaygo, Mich.—I am inclined to believe that the milk becomes loaded with bacteria after it is milked. That accounts for it becoming stringy. Giving your cow medicine will not improve a matter of this kind. I would suggest that you be quite painstaking to keep stable clean, milking utensils clean and the surroundings where your milk is kept.

Hens Eat Eggs.—I am anxious to know what can be done, if anything, to cure chickens of the egg-eating habit. I feed my fowls buckwheat or oats morning and a basket of alfalfa chaff and corn at night. They also have what sweet milk they can drink. C. R. K., Mancelona, Mich.—First of all let me say that this habit begins in most cases by the accidental breaking of an egg in the nest. But it rapidly spreads among the flock until a large proportion of the eggs laid are purposely broken and eaten by the hens. I have watched hens who would carry pieces of a broken egg shell and divide with other hens, which no doubt whetted their appetite to eat eggs and egg shells. To guard against the formation of the egg eating habit, fowls should be fed plenty of lime, oyster shells, bone or similar substances to insure a firm strong shell upon the eggs. Eggs with a thin shell are so easily broken that this may be considered one of the early causes of the egg-eating habit. It is also a good plan to have the nests in dark places where if an egg is accidentally broken, the hen may not discover it. A very good plan is to construct the nests so that the egg will roll beyond the reach of the hen. Another fairly good plan is to place artificial eggs in the nests, so that the egg eater cannot make any impression and will perhaps discontinue the habit. It is good practice to remove the egg eaters from the remainder of the flock, and unless they are very valuable, to kill them for the table.

Ridgling Colt.—I have a colt two years old that has not been castrated and there is no indication of either testicle appearing in scrotum. Urine seems to drip from sheath, but most of the time he passes water in a normal manner. F. C., McBain, Mich.—You had better wait until April, then have colt castrated. This is work that should be done by a veterinarian who has had experience in doing this kind of surgical work. Give colt 1 dr. of acetate of potash once a day for a few days, then an occasional dose.

Partial Loss of Power.—We have a colt 18 months of age that has had trouble in getting up for the past two and a half months. He will get up one time without difficulty and the next time perhaps in an hour or two he will be down and unable to rise for some time and will struggle for five or ten minutes. He will rise on his haunches, paw and scrape with his feet, trying to get up. When up and turned out he will jump, kick and run as if nothing ailed him. He is fat and growing quite fast. We feed him about three quarts of oats a day, besides all the hay he wants. Last fall he was troubled with scours but seemed to recover. C. E. W., Kalkaska, Mich.—Give your colt 1/2 dr. fluid extract of nux vomica, 1/2 dr. potassium iodide and 2 drs. Fowler's solution at a dose in feed or drinking water three times a day. I would also suggest that you increase his grain ration to two or three quarts of oats and one quart of wheat bran three times a day. Also, feed him some roots.

Opacity of Cornea.—I have a five-year-old mare that has a film growing over each eye. This eye trouble made its appearance about two weeks ago. J. W. S., Jerome, Mich.—Blow a small quantity of equal parts calomel and boric acid into eyes once a day. Give 2 drs. of Donovan's solution of arsenic at a dose twice a day.

Stifle Trouble.—I have a young mare that has stifle trouble that seems to affect her when first made to step forward or back. Is there any cure, other than blistering? Would this trouble show in her offspring? C. R., Holland, Mich.—You had better paint stifle occasionally with tincture iodine and it will gradually reduce bunch and also strengthen ligaments of joint. Her offspring would doubtless have a slight predisposition to this ailment.

Holstein Bull calf nearly white. Sire: Colanth's Johanna Oreamelle Lad. Dam: Segis' Aggie Hengerveld De Kol. Write GEO. D. CLARKE, Vassar, Mich., for photo and price.

Registered Holsteins 2 yearling heifers same breeding as cattle I sold at Detroit sale at average of over \$300 each. Also 2 or 3 young A. R. O. cows of same breeding. Write or come and see them. Hobart W. Fay, Mason, Mich.

FOR SALE—Registered Holstein bull calves, 1 to 6 months old from a 30 lb. sire and good A. R. O. dams. Wm. Griffin, Howell, Mich. R. No. 5.

DISPERSION SALE

Having decided to quit farming, I will sell at Public Sale my entire herd of Registered Holstein Friesian Cattle consisting of ten cows and heifers at my farm 5 miles east of Oak Grove on the Ann Arbor R. R., 9 miles north east of Howell, on Thursday, March 1st, 1917 at 1 o'clock P. M. Three of the cows have good A. R. O. records and several of the others are daughters of these cows. Sale of farm tools at 9 o'clock A. M. No catalogues. JOHN AUSTIN, - - OAK GROVE, MICH.

Holstein and Guernsey Heifer and Bull Calves Choice selected promising dairy calves, practically pure Holstein and pure Guernsey, but not registered, nice color. \$20.00 each, all express paid to any point. MEADOW GLEN, Whitewater, Wis.

For Sale Registered Holstein cow, 8 years old, large, sure breeder, persistent milker. 2 A. R. O. sisters. C. L. Hulett & Son, Okemos, Mich.

HEREFORDS

Both sexes and all ages for sale, our herd comprises about 100 head representing the blood of such sires as Prime Lad 9th, Perfection Fairfax, Bonnie Brae 3d and Dale. Write us your wants.

ALLEN BROS., PAW PAW, MICH.

20 Herefords BOTH SEXES ALL AGES EARL C. McCARTY, Bad Axe, Michigan

Maple Lane R. of M. Jersey herd offers for sale tuberculin tested cows, bulls, bull calves and heifer calves, carrying the best R. of M. blood of the breed. IRVIN FOX, Allegan, Mich.

Healthy Horse Perspires Freely.—What would you advise me to feed a horse that perspires too freely? He is short-coated, in fairly good condition, and we are exercising him every day; I might add that he is a stallion and registered. F. W., Snover, Mich.—If he is a trotting horse and you desire to keep him in good road condition, feed him one part bran, five parts oats, and timothy hay. It would be bad practice to prescribe drugs for a horse of this kind.

Bone Spavin.—I have a very fine horse that has bone spavin, causing lameness. Have applied iodine and strong camphor, but it fails to relieve him. A. D., Mason, Mich.—Give horse absolute rest for six or eight weeks, clip off hair and apply one part red iodide mercury and four parts lard every two weeks; or you can safely apply any of the commercial spavin remedies that are regularly advertised in the Michigan Farmer.

Indigestion—Impure Blood.—Horses have what our local Vet. calls summer sores on their necks and shoulders. Their urine appears to be thick and highly colored. C. R. J., Sandusky, Mich.—Give 1/2 dr. of ground nux vomica, 1 dr. powdered sulphate of iron, 1/2 oz. ground gentian and 2 drs. of Fowler's solution at a dose in feed three times a day. Also give him a teaspoonful of acetate of potash once a day.

Worms.—I have two horses that are troubled with long white worms. C. V. H., Portland, Mich.—Mix together one part powdered sulphate iron, one part ground nux vomica, one part salt and three parts ground gentian; give each horse a tablespoonful at a dose in soft feed twice a day.

Pica.—I have a calf that does not thrive, is growing thin, but appears to eat almost everything that comes within its reach. It seems to be especially fond of chewing rags and other rubbish. J. M., Wetzell, Mich.—Mix together one part ground nux vomica, one part air-slaked lime, one part powdered sulphate iron, three parts of ground gentian, give it a teaspoonful or two at a dose in ground feed three times a day. Feed the calf a greater variety of kinds of feed.

Obstructed Teat.—I have a three-year-old heifer that came fresh January 24, 1917; up to this time she was always an easy milker, but lately it is almost impossible to draw milk from one of the teats; this is on account of an obstruction in teat. R. W. B., Marine City, Mich.—You had better employ a competent Vet. who will perhaps be able to relieve this blocking by either removing the obstruction or dilating teat canal.

Weakness.—I have a fall calf five months old that is weak on all four legs. Pleasant days she has plenty of exercise, is kept in a box stall 10x10, fed alfalfa, timothy, clover, cornstalks, corn meal and ground oats cooked and mixed with milk and water. G. L. L., Oak Grove Mich.—Give your calf 12 drops of fluid extract nux vomica, a teaspoonful of tincture gentian, a teaspoonful of tincture cinchona and 25 drops of Fowler's solution at a dose three times a day.

Good Dairy Cow.—We have a cow that is due to freshen in April and we are unable to dry her up. She is a Guernsey about 12 years old and gives about four quarts of milk night and morning. If I should stop milking her would there be any danger of bringing on milk fever? R. F. W., Augusta, Mich.—In a case of this kind your cow should be well fed up to calving time and if it is necessary, milk her once a day until she freshens. She is doubtless a good dairy type of cow and should not be injured by trying to dry her up.

Choking—Congestion of Lungs.—I have a bunch of four-months-old pigs and some of them have died. The first one died suddenly, appeared to be all right when it approached feed trough but after taking a mouthful, staggered back, fell over, kicked considerable, and after a while got up and appeared all right. I then commenced to dope them some, but in the meantime one had died suddenly; some time later another died, which I opened, found clotted blood in lungs and around the heart. One of them that died acted very much as if it had been foundered. I have been feeding them culled beans mixed with bran and milk once a day, and a slop of middlings and bran, with corn at night. Mrs. J. B., Kibbie, Mich.—First of all you should keep your pigs in a warm, dry, comfortable place; their slop and feed should be fed to them warm; furthermore, it should be spread out to prevent their filling the mouth too full and choking. Rub their throat with one part turpentine and two parts raw linseed oil; also rub their sides back of shoulder; this should be done to those that are sick only. Mix some ginger, cooking soda and charcoal in their feed twice a day.

PUBLIC SALE OF 20 REGISTERED HOLSTEINS 20 Consisting of 18 Females and 2 Bulls

One of the bulls was sired by the great bull Friend Hengerveld DeKolt Butter Boy that has five 30 lb. daughters. The dam of this bull has a 31 lb. record and is a daughter of Pontiac Aaggie Korndyke that has 12 30 lb. daughters. This bull has five calves in the sale and many of the females are bred to him. Trains leave Ionia & Grand Rapids at 7 A. M. and Lansing at 8 A. M. for Grand Ledge. Free transportation to and from the farm. Catalogs ready Feb. 24th. Cattle will be sold promptly at 1 P. M.


F. D. RIPLEY, - - - Grand Ledge, Michigan

AUCTION SALE

Friday, March 9, 1917. AT CHEESEBROUGH FARM,

Six miles West of Lake Odessa, Mich., Nine miles North and two East of Hastings, Mich. 27 head Holstein Friesian Cattle, our entire herd, will be sold at Auction to the highest bidder. These cattle all Tuberculin tested, sound and all right, in every way. Twelve cows giving milk, the balance young cattle, except our Herd sire, three years old. We have daughters of a thirty lb. sire, also daughters of a twenty-nine lb. sire, also 7 head of horses, and all farm tools. The cattle sale will begin promptly at 1 o'clock sharp. PROP. CLUM & CHEESEBROUGH, Address Lewis Clum, R. No. 43, Clarksville, Mich.

CATTLE



Dairymen! —The Truth

You may be prejudiced against the Jersey because you don't know her. Look her up. She's the Money Cow.

Get This Book—a history of the breed and full of very interesting tests and facts. It proves conclusively that for pure dairy type, economy of production, richness of milk, long life and adaptability to feeds and climates—all these combined—the stands way above them all. This book "About Jersey Cattle" is free. Get your copy now. You'll find it mighty good reading.

The American Jersey Cattle Club
346 West 23rd Street, New York City

HOGS.
Durocs and Victorias
Heavy bone, lengthy Spring Boars and Gilts from prize winners sired by one of the best Sons of the Great Defender & other noted strains. M. T. STORY, Lowell, Mich.

Swigartdale Farm Berkshires
Home of the greatest show herd in the State. Stock of all ages and both sex for sale, including some of the winners at the State Fair, write us for particulars and let us tell you about them and our HOLSTEIN BULLS
some of them old enough for service, sired by "Maplecrest Korndyke Hengerveld" (the Bull with the best yearly record backing of any sire in the world) and "G. & B. Segis Ulrica Pledge 108790," all from A. R. O. Dams with good records and the best of breeding, one very fine Grandson of the FIFTY THOUSAND DOLLAR BULL out of a 27.39-lb. dam, all stock guaranteed to be just as represented and a credit of six months will be given to responsible parties.

SWIGARTDALE FARM,
Petersburg, Mich.

Berkshires: Gilts and mature sows that will farrow in April and May. Mammoth Toulouse Geese. Pekin Drakes \$2 each. Chase Stock Farm, R. 1, Mariette, Mich.

Berkshires, Boars, serviceable age, best blood lines, Registered. ELMHURST STOCK FARM, Almont, Mich.
J. W. KEENEY, Erie, Mich. Gilts bred for April farrow. D. M. & T. local from Monroe or Toledo, Keeney Stop.

Duroc Jerseys 30 bred gilts for sale priced to sell. Hastings, Mich. Carey U. Edmonds.

Duroc Sows, Spring gilts, Aug. Boar Pigs, Sept. Pigs either sex. Percheron Stud Colt six months old. E. J. Aldrich, Tekonsha, Mich.

Duroc Jerseys Gilts and tried yearling sow bred to a son of Orion Cherry King the Premier Champion of the breed also fall pigs. F. J. DRODT, R. 1, Monroe, Michigan

HIGH CLASS FALL BOARS
registered. Will mature into big type hogs. \$20 to \$40 NEWTON BARNHART, ST. JOHNS, MICH.

Durocs, pigs of Sept. farrow. (Dams) by Joe Orion 2nd Defender & Superba, Highland King (Sires) Superba King and Hooster J. O. C. Either sex. H. G. Keeler, Cassopolis, Mich.

Duroc Jersey Gilts We have a choice lot of good rugged heavy boned Gilts, registered. All bred to our Herd Boar, Jennings Pilot Wounder No. 7373. Bred for Apr and May farrow. Send for pedigree. Prices reasonable. THE JENNINGS FARMS, R. F. D. 1, Bailey, Mich

Duroc Sows and gilts bred to Eureka Cherry King and Crimson Critic son of Critic Model 1916 champion Iowa Fair. W. C. Taylor, Milan, Mich.

FOR SALE: Duroc Jersey swine, choice breeding good quality (either sex). S. C. W. Leghorn cockerels \$1.50-\$3. Buff Rock cockerels \$2-\$3. John McNeicol, Station A, R. 4, Bay City, Mich.

Duroc Jerseys—Boars and Gilts all sold. Some good fall pigs for sale. Wm. W. Kennedy, Grass Lake, Michigan.

Duroc Sows and gilts bred for Mar. & Apr. farrow, King The Col. Defender and Oakland & Nancy families. E. D. Heydenberk, Bell Phone, Wayland, Mich.

Reg. Duroc Fall Sows, Good ones, \$25.00, where in state. J. R. Hicks, St. Johns, Mich.

PINEHURST DUROCS. Choice fall boars. One piglet yearling boar. Choice Yellow Dent Seed Corn for sale. Orlo L. Dobson, Quincy, Michigan.

CHESTER WHITES Gilts bred to farrow in Feb. or March. Fall pigs, either sex. F. W. ALEXANDER, Vassar, Mich.

Parhams' Pedigree Stock Farm offers: Reg. C.W. Boars, Bred Gilts, Fall Pigs, Reg. A. R. O. Holstein Cows, Male Calves. Show Bull ready for service, price \$125. R. B. Parham, Bronson, Mich.

CHOICE BRED GILTS Bred to Big Prince 59002, sired by Wildwood Prince 110 lb. 3 yr. Grand Champion at Iowa, sold for \$50. Ship C. O. D. —J. Carl Jewett, Mason, Mich.

O. I. C. and Chester White Swine, all ages. A few either sex, sired by Grandella Wonder, Grand Champion at Ohio State Fair, Schoolmaster the champion of champions and highest price boar of the breed and others. Get a sow bred to Gallaway Edd Grand Champion Mo. State fair, we are booking orders. We have the undefeated breeders age herd at six state fairs. Get our catalogue, buy the best it pays, we have them. We ship on approval. Rolling View Stock Farm, Cass City, Mich. R. 2

O. I. C. Serviceable Boar's, Gilts bred for March and April farrow. Prices reasonable. H. W. MANN, Dansville, Mich.



Raise Chester Whites?
Like This the original big producers

I HAVE started thousands of breeders on the road to success. I can help you. I want to place one hog from my great herd in every community where I am not already represented by these fine early developers—ready for market at six months old. Write for my plan—More Money from Hogs. G. S. BENJAMIN, R. F. D. 10, Portland, Michigan

O. I. C. & Chester White Swine

Strictly Big Type. Five gilts bred for Apr. & May farrow. Bred to as good boars as there are in the breed. Have a fine lot of fall pigs, that I can furnish, in pairs not akin. Newman's Stock Farm, Mariette, Mich. R. 1.

O. I. C. Serviceable boars. Yearling sows and fall pigs. G. P. Andrews, Dansville, Michigan.

O. I. C. Year old boar 2nd prize winner at Grand Rapids fair also spring gilts and boars ready for service. A. J. Barker, Belmont, Mich. R. R. 1.

FOR SALE Thoroughbred O. I. C. Swine, sows bred, gilts and boars. O. D. Somerville, Grass Lake, Mich. R. 2

O. I. C.'s 25 choice Gilts bred to Son of Schoolmaster to farrow in Mar., also fall pigs. Clover Leaf Stock Farm, Monroe, Mich., R. 1.

O. I. C.'s Am offering two extra good boars and a few bred gilts. C. J. THOMPSON, Rockford, Michigan

O. I. C.'s One extra good big last Sept. yearling sow bred for spring farrow, last spring sows bred and some extra good last fall pigs, also service boars. 1/2 mile west of depot. Otto B. Schulze, Nashville, Mich.

BIG TYPE P. C. Boars and Gilts all sold for this season. Armstrong Bros., R. 3, Fowlerville, Mich.

O. I. C. SWINE: Bred gilts are all sold. Order a pair or a trio not akin to breed in the spring. Rush in your order before they are sold. Satisfaction guaranteed. A. J. GORDEN, R. No. 3, Dorr, Mich.

O. I. C. Choice gilts for Apr. and May farrow. Fall pigs. The growing kind. Write for low prices. A. V. HATT, Grass Lake, Mich.

NOW IS THE TIME TO BUY

Twenty-five tried Big-Type Poland-China brood sows to be bred for March and April farrow. Ten splendid Spring boars at \$25.00 each for quick sale. Worth \$50.00.

Hillcrest Farm, Kalamazoo, Mich.

At Half Price and Sold Out

Except some dandy fall pigs, and a big rugged black Percheron Stallion, (registered) coming three, for \$350.00. Come and see him. J. C. BUTLER, Portland, Mich. Bell Phone.

Big Type Poland China Fall boars and gilts, two G. W. HOLTON, R. 11, Kalamazoo, Michigan

LARGE STRAIN P. C.

One extra good fall yearling and a few choice spring boars. A nice lot of gilts being bred. April farrow. H. O. SWARTZ, SCHOOLCRAFT, MICH.

HEAD YOUR HERD With one of my Big Type Poland-China boars. Get a good one while the prices are reduced. Something that will win at the fairs. Write at once for pedigrees and prices. M. E. HESS, 68 S. Johnston Ave., Pontiac, Michigan.

Large Type P. C. Gilts bred and April farrow all sold. A few good ones to be bred for June farrow. Also some good fall pigs either sex. W. E. LIVINGSTON, PARMA, MICH.

Poland Chinas. As big, as good, as grow in Iowa. Herd headed by Goliath Farver. I can please you. Robert Martin, R. 7, Hastings, Michigan

Large Type Poland China Bred Sow Sale, Feb. 20, '17 Write for catalog. W. J. Hagelshaw, Augusta, Mich.

Big Type Poland China Gilts, bred for April farrow, with size and quality. A. A. WOOD & SON, Saline, Michigan.

BIG Type Poland Chinas. Choice April boars, fall pigs in pairs. Chance to get started for a little money. Big Minorca Cockerels. Satisfaction guaranteed. R. W. Mills, Saline, Mich.

Large Stiled Poland China sow bred, fall pigs, either sex. Young Shorthorn cow and four month bull calf. Robert Neve, Pierson, Michigan

POLAND Chinas bred gilts all sold, still have some choice fall pigs of large and medium type, at farmers prices. P. D. LONG, R. 8, Grand Rapids, Mich.

10 Yorkshire Gilts, 2 Boars one mature; Red Polled cattle. E. S. CARR, Homer, Michigan.

HALLADAYS' HAMPSHIRE 5 tried sows, 2 yearling boars, for immediate sale. Fall pigs. O. H. Halladay & Son, Clinton, Michigan

Hampshire Swine. Bred Sows and gilts for August and September farrow s. Spring pigs, sex both. FLOYD MYERS, R. No. 9, Decatur, Ind.

HAMPSHIRE HOGS all sold out. would sell one herd boar and book orders for spring boar pigs. John W. Snyder, St. Johns, Michigan, R. 4.

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Oxford Down Sheep No more for Sale. M. F. GANSSLEY, Lennon, Michigan.

Additional Stock Ads. on Page 265

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