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Increased Crop Production for 1917

By M. M. McCOOL

Professor of Soils, M. A. C.

THE receipt of many letters from Michigan farmers, relative to soil management for 1917, together with the need for increase of crop production, have prompted the writer to present this paper. Everyone realizes the present and immediate future food situation, and appreciates the opportunities for profit in, as well as the need for higher crop production.

Crop production may be profitably increased in several ways. On account of the present labor situation on the farm it is doubtful if this increase should be attempted by increasing the acreage or the area to be put under crops, but strenuous efforts should be made to decrease the waste on many farms and to obtain larger yields from the acreage now under cultivation. Of course, there are exceptions to this. Many doubtless can and will increase the extent of their gardens, as well as the acreage of the general crops, to great advantage to themselves, the state, and the nation.

There are many wastes on the farm. It is indeed an old story, but it is well to take cognizance of one of our greatest national weaknesses, as a weakness we must consider it, namely, that we have been in the past, and are to a somewhat less extent at present, wasteful on many of our farms. Many, if not all of us, realize wherein we are wasteful. Some of the most potent are improper fitting of the seed bed and subsequent tillage operations, the sowing of unimproved or low-yielding strains of seed of low percentage of germination and vitality, and the non-treatment of seed for smut and other diseases, the inconsideration of the crop adaptation of soils, and certainly the losses entailed due to careless handling of stable manure. There are others that are important also, such as the loss of plant food from soils by washing or erosion, and mismanagement of live stock, etc.

The above are some of the many channels through which waste takes place on our farms. Certainly it is not exaggerating to

state that much of this may be prevented, in the majority of cases with great profit to the individual and with advantage to the nation.

The judicious use of certain fertilizers should increase crop production and also be profitable to the user. We have many inquiries in regard to fertilizers, their value, and function. It is perhaps unfortunate, but nevertheless true, that our knowledge respecting the value of fertilizers for Michigan soils is fragmentary, or incomplete, or in other words, we are lacking in definite knowledge of our soil

needs. Years of carefully systematic experimental work in the representative agricultural regions of the state are necessary before we can speak with authority on this subject, (yet we should not overlook the fact that such work is rapidly being gotten under way by the Michigan Agricultural College Experiment Station). When we consider that the total annual tonnage of fertilizers consumed in this state is small in comparison with that consumed by the states to the east and south of it, we are forced to conclude that the farmers, as a whole, do not con-

sider their general use justifiable. In 1915, Michigan and certain other states consumed the tonnage given in the following table:

State Fertilizer Tonnage.

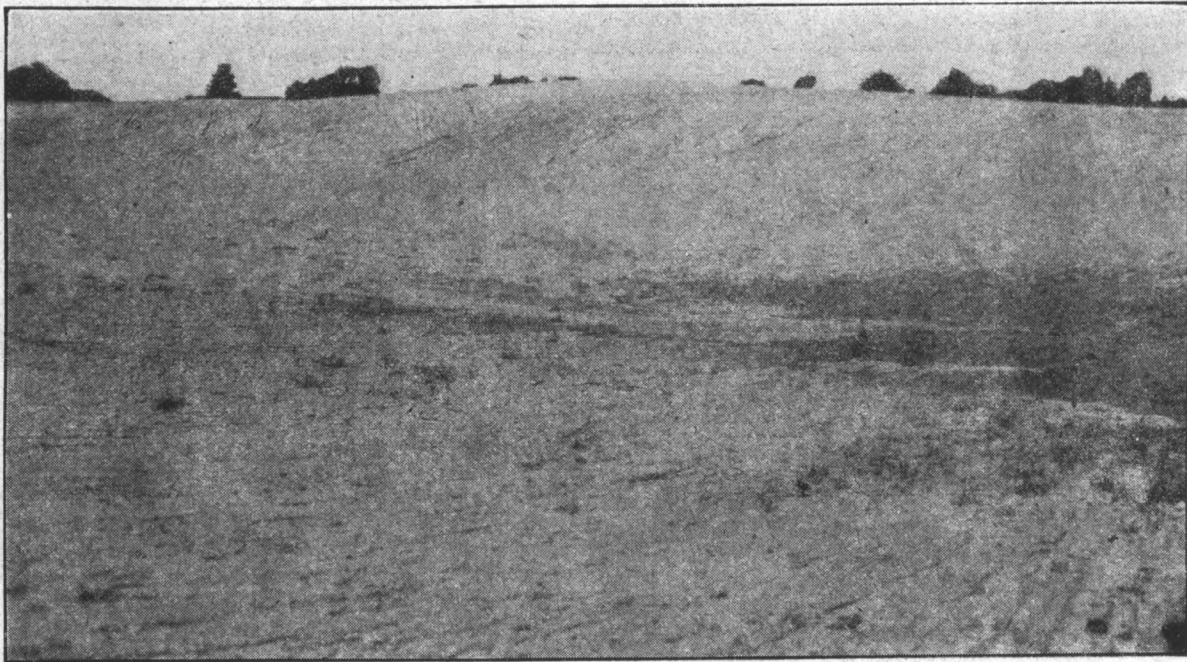
	Total tons.
Michigan	65,000
New York	525,000
Ohio	225,000
Indiana	156,150

The writer, however, has interviewed many farmers in different parts of Michigan, and in addition, has received reports from certain County Agricultural Agents, as a result of which he is forced to conclude that the judicious use of certain substances under the present prices of grain, etc., would result in greatly increased yields to a profit to the farmer, and especially would this be true in the case of soils that have been under cultivation for a long time and have not received the best of care.

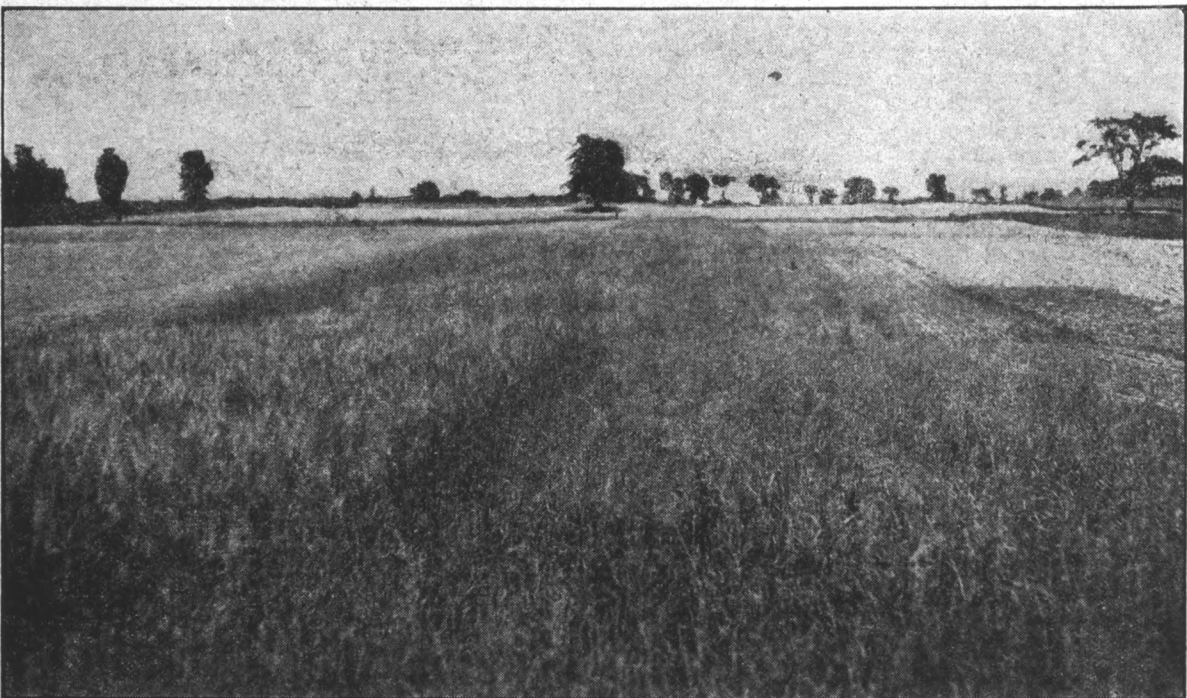
It often pays to supplement stable manure with phosphorus. Many farmers in Michigan, as well as in other states, have reported excellent returns from the reinforcement of stable manure with acid phosphate at the rate of about 400 pounds per acre in a four-year rotation, and others are using raw rock phosphate with manure at the rate of about 1000 pounds or more per acre in the rotation. The benefits to be derived, of course, are largely due to the fact that stable manure contains comparatively small amounts of phosphorus, its addition resulting in a better balanced plant food.

Should mixed fertilizers be used? This is a question that cannot be definitely answered in the light of our present knowledge of our soils. It seems that it is generally true that one cannot afford to purchase nitrogen on the market for the production of our staple crops when it can be obtained by growing clover, soy beans, vetch, and other legumes for approximately one-third of what it costs on the market. The evidence,

(Continued on p. 537).



Much Plant Food is Wasted Through Erosion by Tilling with the Slope Rather than Opposite it.



Small Grains Usually Respond to Phosphate Fertilizers, which May be Profitably Used to Increase Yields.

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DETROIT, APRIL 28, 1917

CURRENT COMMENT.

Patriotic citizens of Michigan have every reason to be proud of the manner in which the preparedness campaign has been handled in this state. The first step in the program was the provision for a \$5,000,000 war fund by the legislature, and the designation of a War Preparedness Board consisting of the Governor and his cabinet of state officials. The next important step in this connection was the calling of a conference by Governor Sleeper for a discussion of the agricultural phases of preparedness and the subsequent appointment of a Food Preparedness Board headed by Ex-Governor Fred M. Warner.

At the first meeting of this new board, through the co-operation of the State Board of Agriculture, provision was made for the immediate appointment of thirty emergency agricultural agents to cover the forty counties in which county farm bureaus have not yet been organized. These new agents are to be appointed by the Extension Department of the Agricultural College and, together with the agents already in the field, are to aid the Food Preparedness Board in the matter of determining the peculiar needs of each county, and to aid in the local work of that body, particularly as relates to the distribution of needed labor.

In addition these agents will for the period of not to exceed six months, take up such phases of regular county agent work as the Extension Department may deem most essential. The cost of this emergency work will be paid by the War Preparedness Board from the available funds created for war uses. These agents are being rapidly selected and placed in the field and ere this issue reaches the reader most, if not all, of them will be working on the job.

In addition to this co-operative movement, the Food Preparedness Board at its initial meeting last week laid plans for the providing of seed and financing of increased farming operations throughout the state. Under these plans the co-operation of local banks and the local elevator men will be secured. Plans were also made for augmenting the farm labor supply to the greatest possible degree in the immediate future, also for the mobilization of the high school and other students for special work in caring for and harvesting the crops wherever their services can be best utilized. With all these various agencies working in harmony and under efficient direction, Michigan is probably more thoroughly organized than any other state in the Union for effective preparedness work at this time. While others may be waiting for federal co-operation which will un-

doubtedly be forthcoming at a later date, Michigan has taken the initiative and done everything possible to provide for an increased food supply and to bring about a general state of preparedness for whatever eventuality may be in store for us through the forced entry of the nation into the world war.

Perhaps one of the most difficult tasks confronting the federal and state governments, and the various lesser agencies working in harmony with them in the campaign for preparedness, is to bring home to the average American a proper realization of the necessity of increased production all along the line, if our nation is to be a deciding influence in the early termination of the war.

Accustomed as we are to the contemplation of abundant reserve stores of all staple food stuffs, it is difficult to realize that at the present time the national larder is extremely low, while the food prospects are not reassuring. These facts are forcibly reflected in the trend of market conditions for all kinds of food stuffs. The world's reserve of cereal grains is less than at any previous period in recent history, while the world prospect for the wheat crop is anything but reassuring. The only hope of making up for this shortage is through the increased planting of spring grains. The nation's share in the world war includes first the duty of feeding the European Allies as well as providing ample food stuffs for her own people and her own armies. When it is remembered that the destruction of food stuffs through the ruthless submarine warfare is bound to continue in considerable if not increased proportion, the duty of the American farmer in this emergency becomes more plain. And this increased production, if it is to be brought about at all must be largely through the effort and efficiency of the general farmer on from eighty to one hundred and sixty acres, where increased energy and efficiency will count most effectively for increased production.

In all of the conferences which have been held—both state and national—there has been every confidence expressed by men who are better qualified to judge than perhaps any similar group that could be found in the country, that an increase in the production of staple food stuffs will be profitable as well as patriotic, since there is every assurance that all will be needed at record prices. The farmer who hesitates to increase his acreage of staple food crops because of the fear of possible low prices, due to generally increased production, should pause to consider the fact that ere any of the crops which he may plant or sow are ready for the harvest, the reserves of this product will have been in most cases completely exhausted.

In the event of a long continuation of the war there can scarcely be a possibility of over-production. In the case of its early settlement there would be even greater demand for staple food stuffs during the coming year, since the central European nations as well as the Allies would compete for our surplus in the open market. Unquestionably there will be a profitable market for all of the staple products which we can grow, which is a potent reason why we should co-operate in this general campaign of preparedness by increasing production along these lines to the maximum of our capabilities.

Reports from various sections of the state indicate that at many points market milk is bringing a premium over the price agreed upon between producers in the Detroit district and the distributors of milk in the state's metropolis. Field Secretary Reed of the Michigan Milk

Producers' Association, reports two recent instances of this kind.

A unique milk meeting held at Weberville, Mich., Saturday, April 21, proved an enthusiastic rally which partook of the nature of a patriotic mass meeting. Following the calling of the meeting to order by President Silsby, and the report by the chairman of the selling committee, Superintendent Eccles of the local factory announced the willingness of his concern to pay the advance of twenty cents per hundred asked by the producers, which will make the product an average price of \$2.00 per hundred for the summer months. The meeting was closed by the singing of patriotic songs, with a mutual good feeling between producers and buyers.

A similar situation is reported at Tecumseh where at a recent meeting the Detroit distributors purchasing the product offered the producers an option between an increase in price which would make their milk average \$2.00 per hundred for the summer months, or additional compensation which would bring the price up to that received by the patrons of condensaries. These and other instances following an earlier announcement of an advance of fifteen cents above the contract price at the Warner plants, beginning April 1, indicates a general appreciation among milk distributors that abnormal conditions arising since the contracts were made must be fairly met in order to sustain the milk supply during the summer months.

It appears that in this manner the added cost of production due to the great increase in the price of feeds since the yearly contracts were made will be divided between producer and distributor rather than added to the consumer's burden. This is a fair way of meeting special conditions which have arisen, and is an illustration of the fact that fair minded men can generally settle their business problems in an equitable manner to all concerned when these problems are approached in a fair minded manner.

Use the County Agent.

As noted in another column of this issue, thirty additional county agents are to be appointed to serve counties of the state not now enjoying this service during the coming season. This was the first emergency step taken to promote increased production in the state as a needed measure of preparedness for the eventualities of war, thus illustrating the high opinion of county agent work among the men who are directing the state's preparedness campaign.

These new agents have been appointed primarily to aid in the distribution of labor which may become available wherever same is needed on the farms of their several counties. In addition they will discharge many of the usual duties of county agents acting in organized counties. Every farmer in the state should feel free to call on these men for information and aid, and to utilize their services in every practical manner.

There is considerable discussion in counties where farm bureaus have not been organized, as to the value of county agent work. Interested farmers can secure a first-hand demonstration of the value of this work by getting in touch with the newly appointed agent for his county by attending conferences which will be held by such agent in the near future. To get the greatest benefit from the county agent, every farmer should co-operate with him as well as welcome his aid in the solution of individual problems.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The Allies continue to force the German troops to yield up ground on the western front. All through last week they were able to make gains against the enemy. On April 22 the Germans were obliged to

fall back on the northern and southern extremity of the battle line in northern France. The attempt to stem the advance by bringing up several German divisions last week met with failure as the French and British had prepared for such an emergency. German torpedo boat destroyers fired shells in the region of Calais, killing several civilians. The boats escaped. This port is used to supply the British army in northern France.—The Russians repulsed a vigorous attack on their line at Chelovov and also Zvornor. On the Roumanian front the Russians were obliged to retire at Kezvi and Vasanthal.—Greater artillery activity on the Austro-Italian front indicates the beginning of an aggressive movement by the Italians.—British troops have added to their successes in Asia Minor where they defeated the Turks to the north of Bagdad, and also near Gaza in Palestine.

Rumors have it that the Allies are considering a secret offer with Austria for separate peace. Military reverses and the subjugation of Austria's movements to German dictation are given as chief among the reasons why the dual monarchy would at this time be glad to make peace with the entente allies. The matter is being given consideration by the British-American conferences at Washington.

Swedish workers are demanding a republican form of government. Many demonstrations throughout the country have caused an uneasiness in political circles at Stockholm and rumors of a revolution are being persistently circulated.

Large bodies of workmen in Germany were reported to have gone on strike because of not receiving sufficient portions of food. The latest report however, indicates that the authorities are now in control of the situation, having given the strikers the alternative of either going back to work or being called to the colors.

The Japanese people have voted to uphold the old government, and the new parliament has a very substantial working majority. The issues on which the old government went to the people were to work for the solidification of China's friendship by abstaining from interference in the internal affairs of China, to give support to the entente nations in the present war and to refrain from pressing any attempt to solve unsettled problems with the United States at the present time.

The English board of agriculture has decided that three million acres of pasture land in England and Wales must be plowed for wheat growing this fall.

The inter-parliamentary commercial congress of the allied nations will assemble at Rome on May 17. The congress will be comprised of delegates from France, Italy, England, Belgium, Serbia, Russia, and now that the United States has declared war, representatives from here will likely be included.

National.

Turkey has severed diplomatic relations with the United States and the Swedish minister in Constantinople will now look after American affairs there.

Plans to stop the flow of food from this country through neutral powers to the Teutonic nations are being considered. The large increase of imports into Switzerland has led to suspicion that these goods were being forwarded to the central powers, but the little republic has maintained that larger imports from western countries are now necessary because of her being cut off from the usual source of supplies from Roumania and Russia. The Scandinavian countries will also be affected and with the food situation there already in a very acute state, any movement of this character will be looked upon with grave apprehension.

Representatives of Great Britain and France are in Washington this week discussing military matters with this government. The object of the conference is to harmonize the activities of all the governments so that efforts can be made where they will accomplish the greatest good. Great Britain is represented by Arthur Balfour, minister of foreign affairs.

A county food stuff control has been inaugurated in Grand Traverse county. Control has been placed in the hands of a board, consisting of two farmers, a banker, a seed dealer and the county agent.

President Wilson has formally received Ignacio Bonillas, newly appointed ambassador from Mexico to the United States.

The Michigan committee on the relief of Belgian children have started a campaign to provide for the feeding of 130,000 children of Brussels. The program contemplates relieving England and France of much of the burden in providing for these unfortunate children.

INCREASED CROP PRODUCTION FOR 1917.

(Continued from first page).

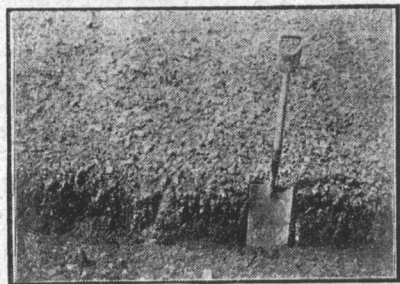
that much of the profits derived from use of mixed fertilizers on the staple crops, where a systematic rotation of crops is practiced, and manure returned to the soil, is due to the phosphorus present, is overwhelming, that is under normal soil conditions. It is doubtless true that the reports of many investigations of the use of fertilizers show that an addition of nitrogen increases the yields on most soils, but the cost of the nitrogen added, and the market price of the crop grown, are limiting factors in the profits to be obtained.

Where beans are to be grown on soils that have not produced a legume for some time, or have not received stable manure recently, an application of about 300 pounds per acre of a 2-12 fertilizer would probably be somewhat more profitable than the phosphate alone, but if the soil is in pretty good condition, with respect to crop residues, about 200 pounds of a fourteen or sixteen per cent acid phosphate would unquestionably be a good investment.

Inasmuch as the yields of the oat crop are generally influenced more by lack of available phosphorus than other plant food elements, applications of 150 to 200 pounds per acre of the acid phosphate for most conditions should be sufficient. Of course, if clover is seeded with the oats the phosphate doubtless would be of great benefit to it. In this connection it is well to call attention to the fact that usually about two-thirds of the acid phosphate should be charged to the first crop grown, and the remaining one-third to the crops that follow.

If the selling price of corn is high and the yields are not as large as they should be, it is probable that an application of about 200 pounds of a 2-12 fertilizer applied in the hill, or about 300 pounds or more, if broadcasted, would be profitable. However, we should not fail to call attention to the fact that the yields of corn may be greatly decreased by lack of rainfall during the blossoming stage, and several days thereafter, irrespective of the plant food at its disposal.

Cowpeas and soy beans may, and do, frequently respond profitably to applications of about 200 pounds of acid phosphate per acre. Buckwheat is another crop, according to reports, that responds to applications of acid phosphate, that is when grown on soils that



Thorough Preparation of the Seed Bed Pays.—(Waters).

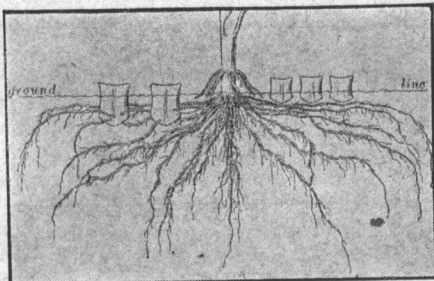
are somewhat depleted of their fertility. Moreover, we have received some reports to the effect that a 2-12 mixture has paid.

Root and tuber crops, unless grown on land previously devoted to clover, or mixed meadow, or manured, sometimes receive rather large amounts of complete fertilizers but, of course, under present conditions, mixtures containing only nitrogen and phosphorus are available. It is probably true that the additions of 600 pounds or more of a 3-12 or 4-12 mixture would increase the yields and the profits derived from many of the poorer soils.

If one contemplates the use of fertilizers it should be strongly emphasized, that good drainage, good soil tilth, good seed, the presence of lime and vegetable matter in the soil, are all essential for maximum efficiency of fer-

tilizers, be they incomplete or complete.

Muck is being used by many farmers in Michigan to improve light sandy soils, proving especially valuable during seasons of low precipitation. Where the deposits lie near the fields to be treated this usually is a paying proposition, standard applications being fifteen or twenty loads to the acre.



The Nature of the Root System Governs Proper Depth of Tillage.

Of course, the benefits derived are due mainly to the increased water holding capacity of the soil and to the nitrogen contained in the muck.

CROP AND FERTILIZER QUESTIONS.

Soy Beans for Hay.

Please tell me how much Ito San Soy beans per acre to sow or drill, for hay. I have been trying to find out from different ones and have not been able to do so.

Branch Co.

J. D. C.

In using soy beans for hay, if you drill them in rows twenty-eight inches apart as you would common white beans, you will need about one bushel of seed per acre. The seed is smaller than white beans, consequently you will have more plants to the acre, but I don't think this will be any too thick for hay. Of course, if you sow them broadcast, you will need more seed, probably twice as much. I think the better way, however, is to plant them in drills and cultivate them.

Capacity of Drain Tile.

How large an area in acreage can a four-inch tile for a main outlet, laid one inch to 100 feet, drain satisfactorily? Also, five-inch, six-inch and eight-inch tile? About how much will it increase the capacity for each one-inch fall in these four sizes of tile up to about fifteen inches to each 100 feet? Above questions relate to outlet tile, not laterals or branches.

Mecosta Co.

C. A. W.

While questions like this are mathematical questions largely, yet they cannot be answered with mathematical accuracy on account of different soil conditions that would exist in different communities. My answer is based on my own experience in draining land more than on mathematical calculations. If a thing works properly, it is all right, even if figures show it to be not exactly correct.

I would not trust a four-inch tile for a main drain with one-inch fall for over four or five acres of land. The capacity of drain tile to carry water is in proportion to the square of their diameter. For instance, the capacity of four, five, six and eight-inch tile would be sixteen, twenty-five, thirty-six and sixty-four respectively. However, if four-inch tile will carry the water from a five-acre field, you would want about a six-inch tile to carry the water from a ten-acre field. In a proposition of this sort we want to be absolutely safe, and therefore, we would use a larger tile than we deem necessary.

I am not competent to figure with anything like accuracy the extra amount of water that would pass through a tile when you increase the fall. I know, of course, that the water will run more swiftly where you have plenty of fall and it would not take as large tile, but there are many things to take into consideration. The faster the water flows the greater the friction also, but again, if the laterals have good fall, the force of the water from the laterals will force the water



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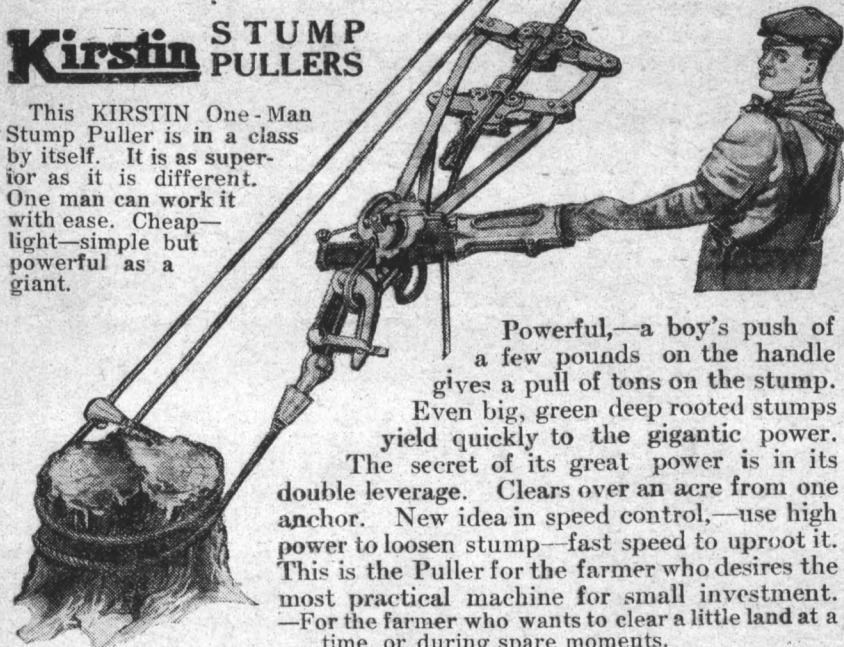
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through the main faster with one-inch fall to the 100 feet than it would run naturally.

The cost of the different sizes of tile for the main drain would not be excessive, and my idea would be to use those of sufficient diameter so that there would be no question whatever about carrying the water. On a good-sized field, say ten acres or more, with each main drain I think it would be wise to use at least a five or six-inch tile.

Inoculating Sweet Clover Seed.

I wish to sow some sweet clover with my spring wheat. Will you kindly tell us just how to inoculate by the glue method? Would you bring the soil in by the stove to dry it? Will the heat destroy the bacteria? How much soil would you use for one bushel of seed? How much glue? Would you soak the seed a few days before sowing? The seed is hulled.

Newaygo Co.

A. F.

Dig up a few sweet clover plants where they are growing in a very thrifty manner. Strip the dirt from the roots with your hands so as to get all the bacteria. For a bushel of seed you would need say, a couple of quarts of this dirt, that would be about all that would adhere to the seed. Don't expose the dirt to bright sunlight. Gentle heat will not kill the bacteria but bright sunlight will. It would be all right to dry the seed by the stove if it isn't exposed to the sunlight. After the soil is dry, pulverize it very fine, of course screening out any pieces of roots, etc., that it may contain.

For a bushel of clover seed you will need about five or ten cents worth of glue, the exact quantity doesn't matter so very much. Dissolve this glue in a pint of warm water, then add enough water to make about a pint, or even a quart will do no harm. Pour this over the clover seed and thoroughly stir the clover seed. You can put the clover seed in a galvanized wash-tub and take a small-bladed spade, a dock spade, a paddle, or even your hands, and thoroughly mix this dissolved glue with the seed. The idea is to get the glue mixed, sift on your soil containing bacteria and thoroughly stir it again. This will adhere to the seed.

It will do no particular harm to leave the clover seed for a day or two if you keep it out of the bright sunlight, but the sooner it is used after treatment the better.

Using Fertilizer as a Top-dressing for Wheat.

I have eight and a half acres of wheat on rather poor soil. Used 150 pounds of fertilizer last fall. Will it be of any benefit to the wheat to apply 100 pounds to the acre broadcast this spring?

Livingston Co.

M. J. M.

Some people recommend the top-dressing of poor stands of wheat early in the spring with nitrate of soda or a good high-grade complete fertilizer. Personally, I never tried this because I could never make myself believe that this was the way to use fertilizer. Fertilizer ought to be mixed with the soil. The plant cannot use it unless it is dissolved in the soil moisture. Now, when you use fertilizer on wheat in the spring you take a chance that the fertilizer will not get down into the soil. You must have rain at the proper time and this rain must not run off from the soil, it must soak down into the soil and carry the dissolved fertilizer with it, if the plant is to get the good of it. Many times conditions are favorable and this idea will work out all right.

As long as you used 150 pounds of fertilizer last fall, I don't believe that it would be profitable anyway to use more this spring as a top-dressing. One hundred and fifty pounds of fertilizer per acre is about all that is necessary to grow a good crop of wheat if conditions are favorable. Of course, if you have seeded this wheat land to grass and clover, a top-dressing of fertilizer now would help this new seeding probably more than it would the wheat.

Beans in Hill vs. Drills.

I would like to get your opinion in regards to planting beans in hills, planted 28 inches each way. Do you think the yield would be as good as if they were drilled? They could be worked both ways and kept much cleaner, and less seed would do. The seed is so high in price this year it would be quite a saving in the cost of the crop.

Lapeer Co.

W. A. C.

I am quite positive that you cannot get as large a yield per acre of beans planted in hills twenty-eight inches apart both ways as you can to have them in drills, having the rows twenty-eight inches apart, because the bean plant is so small that you can have more plants to the acre than you will get when you plant them in hills.

Of course, you can give a little bit more thorough tillage by having the field in hills, and this will apply to every inter-tillage crop as well, but if you use a bushel of seed per acre in drills and will harrow the land with a spike-tooth harrow before the beans come up or with a good weeder, the beans grow so rapidly that they can easily be taken care of without resorting to hand-hoeing. A thin stand of beans will allow the grass to come in, but a thick stand will so cover the space in the rows that weeds and grass do not get a chance to get started. I don't doubt but what you can raise a good crop of beans in hills, but I am pretty sure you can raise more bushels to the acre in drills.

Seeding Winter-killed Spots in Wheat Fields to Other Grains.

I have about sixteen acres of wheat that is badly killed in the low places, and I do not wish to plow the wheat up on account of expectations of a high price next year. Do you think it would be advisable to drag up these low places and sow to spring wheat? Could it all be harvested together? If so please tell me where seed could be procured and how and when it should be sown. If spring wheat is not advisable, how would either buckwheat or beans be?

Tuscola Co.

R. M.

Neither spring wheat or barley would ripen with your wheat and so it wouldn't be practical to use them on account of harvesting. Buckwheat would be worse yet. That ought not to be sown until your winter wheat is about ready to harvest. As a matter of fact, you could harvest the wheat, disc up the ground immediately, and sow to buckwheat, and if the moisture condition was favorable for germination, you would stand a very good chance of getting a crop of buckwheat after you had harvested your winter wheat. I don't believe that there is any crop that you could put in these poor spots that would be practical. Should you fit them and plant them to beans, the inconvenience of tillage and harvesting would practically take all the profit there would be in the crop and perhaps more.

Corn After Beets.

Isn't it considered poor policy to plant corn in ground that grew sugar beets last year, if only a light crop? Tenant and land owner do not agree in regard to it. There are two fields which are desired for corn and beans. One is sod and the other grew beets last year, soil about the same. Both corn and beans require rich ground, which one will be best to follow beets?

Shiawassee Co.

J. B. H.

The consensus of opinion of those who have tried it is against planting ground to corn that grew beets the previous year. Corn does not seem to do well after beets. If you have very rich land containing a large amount of organic matter you can raise a good crop after beets, but the chances are against you.

Beans do not seem to be affected by the previous crop of beets as much as corn and would be a safer crop to plant on the beet field. I have had a little experience along this line and I cannot see but what the beans were just as good on the beet ground as they were on the land alongside of it, that didn't grow beets the previous year, but every time I have tried to plant corn after beets I have noticed that the corn did not do as well.—C. C. L.



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The Vegetable Garden

By W. MILTON KELLY

IN these days of high-priced food stuffs every farmer should plan to raise a liberal supply of the common staples for family use. It is a mistake to allow one's enthusiasm for a good garden to come to an end after plans have been made for a sufficient supply of early vegetable crops. Radishes, lettuce, onion sets, sweet corn, potatoes and tomatoes are all important in their seasons, but the farmer who plans on making the most out of his garden must provide an abundance of the staples for his table during the winter months.

Later Varieties Good.

Earliness is not a requisite in growing the best varieties of tomatoes, beans, peas, sweet corn, potatoes, beets, peppers, turnips, cucumbers, onions, celery, cauliflower, cabbage, and the like to fill the cans, pickle jars and bins for the winter supply. It is more a matter of choosing suitable varieties, getting the best seed and providing sufficient manure and fertilizer to insure perfect maturity before the frost comes in the fall. Keeping qualities, adaptability to canning and flavor are the factors that determine the value of the winter staples. The Stone tomato is unexcelled for canning purposes as



Grow Swiss Chard for Greens.

it is uniform in shape, very meaty and of prime quality. For home canning purposes the medium varieties of beans, peas and corn are preferable to the very early or very late sorts. The round potatoes, such as the Rural New Yorker and Carman No. 3 are of superior size and quality for cooking and eating. Cucumbers, planted late for pickling purposes, produces larger crops and the vines escape the insect pests which so frequently destroy the early crop. Beets, turnips, carrots, parsnips and salsify should not be overlooked. They are easy to grow and provide a lot of palatable food for the winter when one can use them fresh from the cellar. Standard varieties of onions, cabbage and celery yield larger crops of better quality than some of the smaller and earlier varieties.

Time the Maturing of Crops.

In planting vegetables for canning purposes and for storage in the winter it is better to regulate the time of planting so that the crops will mature about the same time. This greatly simplifies the work of canning and makes it possible for one to take one or two days to gather and store the vegetables for winter. The amounts of the various vegetables to plant depends so much upon the varying tastes of the different families, and the varying yields obtained that it is difficult

for one to give advice that would apply to any individual grower.

In harvesting root crops special attention should be given to prevent breaking or cutting, and any that are broken should be laid aside for immediate use. If one has a barn or stable floor on which to handle them it is well to leave them there to become well cooled before putting them in bins in the cellar. Always keep the cellar dark and cool and put the roots and vegetables in bins constructed of slats so as to afford a free circulation of air. The vegetable room should be located so that it will not be warmed by the cellar heater and should have a window that may be opened and closed to insure good ventilation and afford means of regulating the temperature. As a rule, it is better to delay storage of cabbage, cauliflower, celery and turnips until the weather becomes rather cool. Cabbage and celery will not keep well in a cellar that cannot be kept cool at the time.

A NEW INSECTICIDE FOR CONTROL OF CODLIN MOTH.

The prevalence of aphids during the past few years makes it necessary to use some spray for its control. Nicotine sulphate has been most efficient for this purpose. However, the use of this has added considerable to the cost of spraying as it has not replaced any other spray material, but is used in addition to the commonly used sprays.

In order to cut down the cost of spraying, the Washington Experiment Station has, during the past two years experimented with nicotine sulphate, or Black Leaf 40, for the control of the codlin moth.

Keeps Fruit Clean.

In 1915 they used the nicotine spray for four sprayings after the calyx spray. For the first spray it was used at the strength of one part of nicotine sulphate to 800 parts of water, plus three quarts of soap to 100 gallons of water. For the other sprays one part of nicotine sulphate to 400 parts of water, plus two quarts of soap to fifty gallons of water. The sprays were applied May 24, June 19, July 23, and August 23 respectively. The total percentage of worms were kept down to from 4.39 to 10.34, the results varying on different trees. On the unsprayed trees there was from 29.98 per cent to 89.2 per cent of wormy apples. These results are very good, considering the fact that no calyx spray was made.

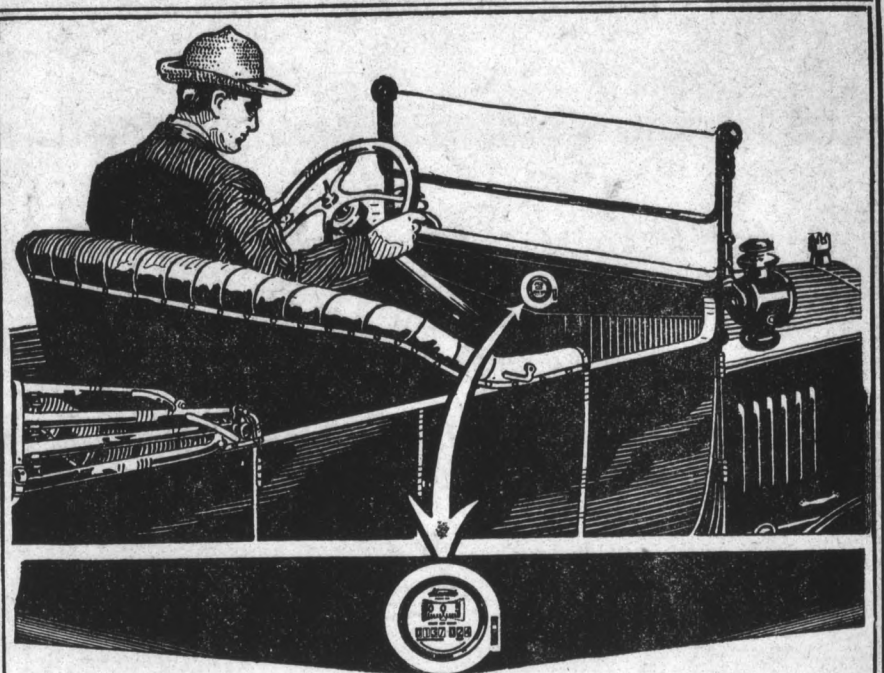
In 1916 the nicotine sulphate was used at three strengths, the same strength being used on the same plot during the entire season. The strengths used were as follows: 1-600, 1-800, 1-1024. Three other plots were also sprayed with the above strengths, but with two pounds of soap added to each one hundred gallons of spray. Four applications were made.

Soap Makes Spray Adhere Better.

All of the plots gave good results, the per cent of clean fruit ranging from 98.53 to 99.81. It was found that the applications in which soap was used adhered longer and spread farther than those without. The general conclusions were that the 1-800 dilution was the most practical to use.

In a comparative test between nicotine sulphate and arsenate of lead four applications of each, the trees were sprayed with nicotine sulphate graded in fruit as follows: Extra fancy 12.1 per cent; fancy 42.9 per cent; C grade 37.5 per cent. Those sprayed with arsenate of lead graded as follows: Extra fancy 7.5 per cent; fancy 15.6 per cent; C grade 38.5 per cent. Of wind-falls the nicotine sprayed trees had only 7.5 per cent, while the arsenate of lead trees had 38.4 per cent.

(Continued on page 546).



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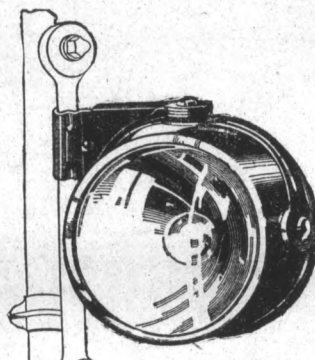
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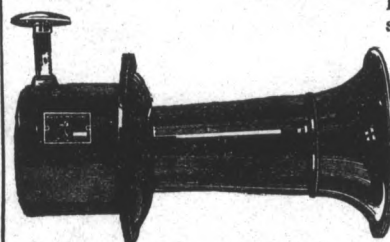
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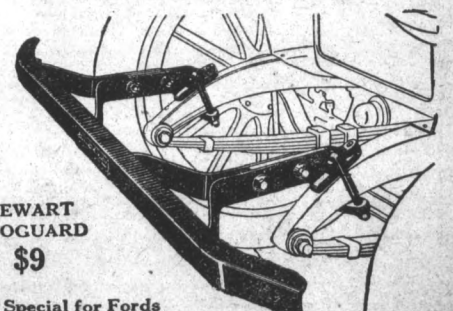
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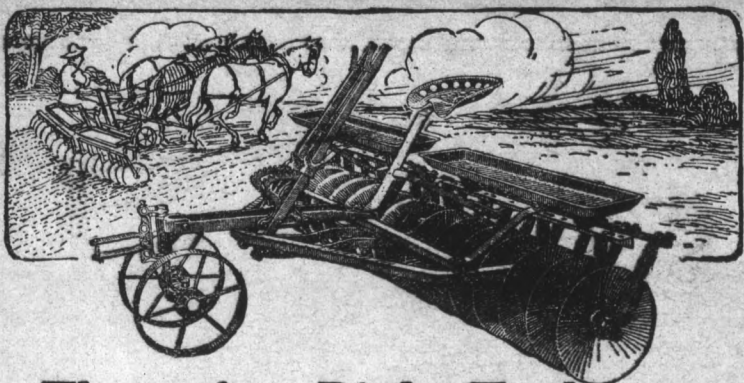
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These Are Right Tools

WHAT you do for your seed beds before the crops go in has so much to do with the yield and quality you reap at harvest time that it pays to go slow and **be right in choosing your tillage implements.** That is why farmers everywhere—your neighbors among them—are using International Harvester disk harrows, peg and spring-tooth harrows, cultivators, etc.

At your I H C dealer's store is your opportunity to find out about these. There you will find disk harrows with rigid lasting steel frames, with gangs made to be level at all cutting angles, bearings with four wears, built correctly as to adjustments, seat and levers. You'll find double harrow attachments, forecarriages, transports, everything to just suit you and your fields, even though they be hilly, stony or of any sort of unusual soil.

Take note of what has made the peg and spring-tooth harrows popular with men who want crops as big as they can be made. Pegs that never wear loose. Oil-tempered spring teeth fastened on steel pipe bars to stay. Runner teeth and transports, easy-set levers, riding sulkies, etc.

Be careful in buying tillage tools and be sure to study the International Harvester line. We have catalogues that will interest you.

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Patriotic Advantages In Organization

THE almost frenzied effort of producers of nearly all lines of agricultural products to effect some change in our marketing systems, has somewhat abated. There are fewer public meetings where untold and visionary plans are tolerated and more conferences in which the delegates bring and seek relevant facts.

The chief reason for the change in sentiment lies, no doubt, in the sudden rise of prices for practically all farm products. When quotations mounted to figures far beyond the dreams of the most sensational promoters, the farmers at once allowed their interest in marketing to be overshadowed by the consideration of methods of expanding production.

In all probability this change may, in a sense, be a good thing for the solution of the marketing problem. If in place of the rabid generalities of unformed persons on to the ills and panaceas of the present system, can be substituted carefully collected data touching upon the various phases of sorting, grading, packing, collecting, shipping, and selling these crops, a long step forward will have been made.

And this seems to be the very business that is now going on. Instead of the appeals from the housetops which by the way, have prefaced most movements for better things and must be credited here for having aroused the public conscience, men are now quietly going about in a business way seeking an economic analysis of conditions and studying carefully the success or failure of new methods of marketing.

Although this sober study was undertaken only within the last few years, results are already apparent. Those groups of men, as well as individual scholars who have made public their findings, generally agree that co-operative marketing offers the most promising solution to many of the perplexities involved in our present system. This conclusion has followed from studies in many markets and for a majority of the crops grown upon our farms.

The results from co-operative effort have been farther reaching than would be apparent to the casual observer. Take for example, the grading of fruit by these associations. In most every community where it has been the system followed for several years there has been a very well-marked improvement in the crops grown by the members of the association. Intimate connection with the distributing machinery has impressed the wisdom of working to produce more of the better grades and less of the poorer. Preaching the doctrine of better goods may in time get results, but the process would be less certain and far slower than where it resulted from the responsibility

and influence of active membership in the organization looking after the selling of the crops. Creameries and egg associations have found the same fundamental principles working and in communities where live stock shipping associations have been active for some time noticeable improvement in the quantity of stock offered, is apparent.

Then the economies of grading and packing in large quantities, of shipping in carlots and the breaking down of the old individualistic tendencies among rural folks through their association together in business matters bring the remedial power of this form of organization to the very root of many of those troubles that do not respond to ordinary private treatment.

By reason of the economies enumerated and others that could be mentioned, it is apparent that these rural co-operative institutions, if generally organized would prove of inestimable help to the nation in times like the present. The products of our farms could be better conserved, production stimulated and distribution performed under conditions that would win the fullest confidence—matters of supreme importance during these trying months of 1917.

In fact, these services have been rendered in a very large measure by similar co-operative organizations in several of the warring countries of Europe. Is it not wise therefore to let this work go forward, remembering that whenever we plan and work for the benefit and uplift of our community we add to the strength of the nation?

CO-OPERATIVE ACTIVITIES IN MICHIGAN.

Southern Van Buren county growers have formed the Decatur Mint & Celery Growers' Association to improve growing, grading and marketing methods. About 300 cars of celery are shipped from Decatur in normal years, the bulk of it going to Chicago.

Growers of cabbage and other crops on muck lands near Byron Centre, Kent county, are planning to co-operate.

The potato growers near Howard City, Montcalm county, have organized and voted to secure certified Russet Rural seed.

Stock is being subscribed for a farmers' co-operative elevator at Marshall, Calhoun county.

The Grand River Valley Growers' & Shippers' Association has been formed at Grand Haven, Ottawa county, and it includes leading farmers and celery growers of Grand Haven, Spring Lake, Crockery, Robinson and vicinity. E. Foster, of Crockery, is president and S. L. Worthing, of Spring Lake, is secretary. This body will affiliate with the growers' association of Muskegon county.

An instructive grape growers' congress was held recently at Lawton and efforts that are being made towards the federation of the different marketing associations were unanimously approved. The growers recommend not less than four sprayings of grapes each season—twice before blossoming and twice afterwards. There was discussion of the expense of producing an acre of grapes and all practically agreed that it cost \$50, so the man who gets an average of two tons per acre must have more than \$25 per ton to make a profit, or he must receive twelve to fifteen cents per eight-pound basket to pay expenses. Prospects for the 1917 season were never better, both from the standpoint of crops and prices. Growers were advised to take good care of their vineyards, improving the acreage that they now have, rather than putting out more.

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BEFORE YOU BUY Be sure and get my prices! Before you buy a manure spreader (gasoline engine, cream separator or tractor) of any make, or kind, or price, first get Galloway's 1917 catalog—the biggest, most important book and greatest money-saver for my customers I ever put out! Get my proposition to you and compare it with all others; then be your own judge! We are actual manufacturers and sell direct to you from our factory. We specialize on the lines we offer. We were first to offer manure spreaders, engines, separators direct from the factory at one small profit. We have made the manufacturing and selling of these lines a life business. You can't afford to buy a manure spreader or any of the other Galloway lines until you first get our prices and our proposition. Get my prices before you buy! Cash or time.

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I saved \$29 by ordering a Galloway. I know it is a better spreader than I could have bought here for \$125. Geo. A. Kralik, Okla. City, Okla.

I saved \$59. Believe I got a better spreader than was offered me here for \$135. A. T. Miller, Orella, Neb.

It is as good a spreader as money can buy. I kept \$56.43 in my own pocket. A team that weighs 1,500 lbs. pulls it easily. W. H. Adams, Pound, Wis.

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Horses for the Army

By FELIX J. KOCH

UNCLE SAM'S final decision to enter the big world-war has caused people of all classes, professions and interests to rise to the occasion and discuss what might be done for the country's good, and in that connection a leading Cincinnati horse dealer, who has been making stupendous sales of horses to the Allies ever since the war opened, points out some suggestions worth our while, in event of need.

"Strange as it may seem," this man puts it, "horses in the Cincinnati market, which is an outlet for the big Kentucky horse-country—are cheaper than they were five years ago, or before the war, and this very largely because much, if not most, of the best stock has long since gone across the pond. What good horses do remain, the farmers or breeders are now definitely holding back, looking to big advance in prices, and so it's not these horses which are sold.

"With a possibility of the war being

dition, they invariably bring a veterinarian along. The officer passes on the general conformation—that phase of the horse; his aide then makes a searching investigation as to soundness.

When horses are to be bought in quantities, notices are generally mounted broadcast and he who would may bid.

Farmers about to breed now, definitely, for chance of army use must, therefore, give especial care as to both sire and mare. The colt, too, in its turn, should be kept in good condition.

Even though the war may have ended long before such colt comes of age, these long years of conflict have already found the best horses gone, and the arts of peace will require good steeds—even as those of war did before.

Thanks to which, raising horses is appealing to the farmer as not in very, very long time.

His may be a patriotic motive at the



Cavalry Mounts, Typical of Purchases for the Entente Allies.

of considerable duration, and, in fact, looking to supply the world, come peace-time, the new supply of steeds, American farmers cannot do better than looking to breeding what horses they can.

"The latter part of the story—the usual use of horses—is, of course, familiar to all; not so, though, the martial side.

"For war purposes, judging by our sales to the foreign governments, two classes of horses are required—cavalry and artillery. In addition, the armed forces buy two grades of mule.

"A cavalry horse must, first of all, be a light horse, well-fitted for riding.

"An artillery horse is the heavier type of horse, and is intended primarily to haul the guns.

"As to the two grades of mules, one is the pack mule, the other the team mule.

"Pack mules are taken where it is not possible to take the wagons. The other mules serve much as the artillery horses do, hauling guns and in general work of transport."

While the prime source of the animal is, of course, the horse farm, per se, infinite quantities can be brought in by farmers of a countryside as well. Farmers having horses, or believed to have, are often notified to bring these in and submit to the test.

The principal cause of rejection of the farm, rather than the stud-bred horse has, so far, been unsoundness.

Anyone hoping to get a horse which is below standard "by" with the army buyers—our own or those from abroad—had best stop at the start. To begin with, the inspectors sent over to buy are good horsemen themselves. In ad-

start—though he may well hope the trend of events need not require—but, for war or for peace, there will be good use for his steed, and this at a price that is sure to repay.

SILAGE INCREASED PROFIT ON CATTLE.

Scott Cunningham, of Missouri, has found a more profitable cattle feeding plan after three years of careful study and accounting. His first two trials with cattle were less profitable than he had expected, although they were conducted in the usual manner. His first car of cattle, averaging 598 pounds a head, were bought in March, 1915, at \$7.15 per hundred. From March 29 to May 23 they consumed thirty-five tons of silage and five tons of wheat straw. Then they were pastured until September 20. The pasture was valued at ninety cents per head per month. From September 20 to November 1 they received grain on pasture. These cattle consumed 890 bushels of corn, eight tons of clover hay and one and a half tons of cottonseed meal up to January 12, when they weighed 1,051 pounds and were sold for \$8.10 a hundred, or a total of \$2,085. The cost of the cattle, including feed, was \$2,055.92, or only \$29.08 below the selling price. This, plus \$185 worth of pork produced behind the cattle, constituted the \$214 profit on the twenty-five head.

A similar lot of cattle was purchased in the winter of 1915 and handled in much the same manner, with the exception that the cattle were fed 200 shocks of corn and five tons of mixed (Continued on page 558).

Make the farm loan include Ideal Heating



The banker knows that radiator heating is an asset

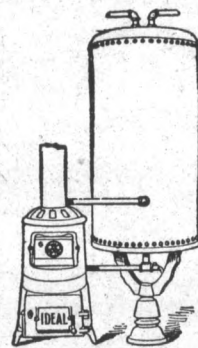
A loan made for improvements which includes radiator heating is much easier to make because the investment in an IDEAL Boiler and AMERICAN Radiators makes the property so much more valuable and adds immensely to the happiness and permanency of the family on the farm. Young and old benefit by it. It is a large dividend-paying investment and soon repays the first cost in a few years. Radiator heating makes any old property modern, healthful, economical and in the "A" class for selling or renting.

Farm success depends upon home comfort

AMERICAN & IDEAL
RADIATORS & BOILERS

The women folks ought to have a portion of the improvement money spent for their comfort. The success of the farm depends upon the health of your wife and the comfort and convenience of your home. You and your family must be comfortable during the long winter season and the raw, chilly Fall and Spring.

Basement or water pressure not necessary—don't wait!

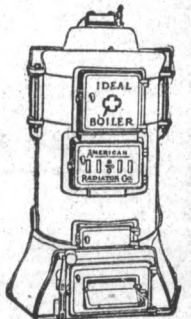


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IDEAL Boiler fuel pots mix the air and coal gases as in a modern gas mantle, extracting ALL the heat from the fuel.

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Our large 48 page book "Ideal Heating" is full of illustrations—will give you much valuable information on the subject of farm house heating. Read it through before buying any kind of a heating outfit.

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"This is for you, girls!"

It's the most wonderful separator I ever saw. I just brought it from Johnson's Hardware Store where they were demonstrating it. You can't guess what it will do."

"I think I know, father. You told me last week about the loss of cream in our old separator when I turned it too slow. You timed me and pretty near scolded me when you found I was turning 37 revolutions instead of 50. This is the separator that "skims clean at any speed". It's a

SHARPLES

SUCTION-FEED CREAM SEPARATOR

"Mary is a smart girl, mother—she guessed it. We all helped to test it and it skimmed to a trace when turned as slow as 36 and equally clean when turned as fast as 55 turns. It simply skimmed faster when we turned it faster. And the cream remained at 35% thruout the varying speeds."

"Why, father—then we will know exactly what the cream check will be each week, wont we?"

"Indeed we will, mother. Now look at the bowl. It's a plain straight tube with a small ring like a napkin ring in it.

"Goody!—I'll get thru washing up in a jiffy, no discs!"

"Yes, girls, and note the knee-low supply tank, and the automatic once-a-month oiling—it has any other separator I ever tried, beat a mile. But then—it's made by the oldest and largest Separator Works in America."

Sharples Separator Co. - West Chester, Pa.

Ask for Catalog "Velvet for Dairymen."—addressing Dept. 18.

Branches: Chicago San Francisco Toronto

Sweeten Your Soil

Soil becomes acid after cropping.

Organisms cannot live in acid soil.

Legumes depend on the growth of organisms.

Growth in your crops depends on organisms.

Acid in your soil is neutralized by lime.

You should use Solvay Pulverized Limestone.

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SOLVAY PULVERIZED LIMESTONE

is powdered as fine as flour. Solvay guarantees that 95% passes through 50-mesh screen. Practically every particle dissolves quickly into the earth—every particle works to sweeten the soil and to create maximum fertility.

Write for full information and expert soil advice. The resources of the Solvay Laboratories and Test Farm are at your service, free.

Increase Your Milk Flow!



Use Acorn Water Bowls

Automatic Control—Fresh

Supply at Every Drink

Write for Circular and Prices

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JOHN W. LADD CO., Detroit—Cleveland

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

LAKE SHORE LIME COMPANY,

Muskegon, Mich., and South Haven, Mich.

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

Please Mention The Michigan Farmer When Writing to Advertisers

IRON AGE GARDEN TOOLS

Answer the farmer's big questions: How can I have a good garden with least expense? How can the wife have plenty of fresh vegetables for the home table with least labor?

IRON AGE Combined Hill and Drill Seeder

solves the garden labor problem. Takes the place of many tools—stored in small space. Sows, covers, cultivates, weeds, ridges, etc., better than old-time tools.

A woman, boy or girl can push it and do a day's hand-work in 60 minutes. \$3.25 to \$15.00. Write for booklet.

Bateman Mfg Co., Box 24C, Grenloch, N.J.

Golden King Learning. "Corn Planter." White corn butter & tipped, hand shelled. \$2.75 bu. sacked, high germination, splendid qual. The E. A. Armstrong Co., Monroeville, O.

Dairymen Prepare

MANY silos in Michigan that, under normal conditions, contain in the spring, from ten to one hundred tons of silage to help tide over the period of short summer pastures, will be empty when the winter feeding period closes this year, and the time to turn on pastures arrives. One of the reasons for this condition is that many silos were not filled to their capacity last fall and some remained empty all winter, due to a partial or total failure in the corn crop in that locality. The quality of the silage that was put up was also in many cases poor, which, together with the high price of grain has caused larger amounts of it to be fed during the winter to get the usual results.

Keep up the Milk Flow.

The fact that this condition exists, means that on the dairy farms and other farms as well, where live stock is kept under more or less intensive conditions, some other provision ought to be made for supplementing the short pastures during July and August. as to furnish a short succession of cut-

sow a patch of oats or oats and peas, in size depending on the size of his herd, to furnish a supply of feed during the early part of the period of short pastures. The amount of seed to sow per acre will depend on the nature and condition of his soil and his location. When oats are sown alone, from one and one-half bushels on the lighter soils, to even double the amount on the heavier soils may be used. When Canadian field peas are sown with the oats, from one-half to one bushel of the peas may be sown per acre and the amount of oats cut down proportionally. When oats and peas are sown together, the mixture should be sown deeper than when oats are sown alone. The oats and peas may be drilled separately if desired, the peas being drilled first and quite deeply, followed by the oats which may be either harrowed or drilled in, but not so deeply. Two or more seedings of oats, or oats and peas, a week or ten days apart, may be made if desired so

State Food Preparedness Board's Appeal to Dairymen

BE PATRIOTIC—IT WILL PAY YOU!

The Nation needs your help—the World needs food. Milk, butter, cheese, condensed milk—all dairy products—are in an unprecedented demand. Prices for these products are higher than ever before—they may go still higher. It is your patriotic duty, as it will be to your profit, to help supply this ever increasing demand.

INCREASE YOUR OUTPUT AT A MINIMUM OF COST.

1. Grow more corn; build more silos. Ensilage is the best and cheapest dairy roughage.
2. Plant more root crops. Beets and rutabagas are palatable and nutritious feeds. Turnips are a cheaply grown catch crop.
3. Grow soiling crops for summer feeding. Sweet corn with pumpkins interplanted will help conserve both grain and forage.
4. Use by-product and commercial grain feeds where economy permits. There is a shortage of all cereal grains.
5. Be as liberal with your cows as they are with you. Gauge their feed by their capacity—study the science of feeding to avoid all waste.
6. Save the heifer calves. Make them food factories for years to come. Don't limit their usefulness to a single meal.

DON'T BE A "SLACKER." ENLIST NOW.

In the campaign of increased food production, which is vital to the success of the Nation's cause, which means lasting peace to the world.

The hot summer season is one of the most critical periods of the year for the dairy cow. It is at this time of the year that she can often more profitably be kept in a darkened, well-ventilated stable, away from the flies, during the heat of the day and only turned to pasture at night. I say more profitably, for if she is obliged to travel over sparse, dry pastures in the heat of the day, fighting flies in an endeavor to satisfy the appetite she always has and should have, due to her inherent tendencies for milk production, she will rapidly fall off in flesh and in milk flow. Once she loses that little reserve supply of flesh that a good dairy cow usually carries and drops off in milk production, it is almost next to impossible to get her back to anywhere near normal flow again, without an excessive amount of feed and attention. All this can be prevented by giving the cow the care mentioned above, which means a very little extra trouble, and supplying feed, preferably of a succulent nature, in the barn.

The Value of Alfalfa.

Now is the time to plan for this. There are several feeds that will answer the purpose very nicely. Probably the universally best crop that may be used for this purpose is alfalfa, because it comes on early and then furnishes a succession of cuttings during the season without reseeding. Dairymen who have a good patch of alfalfa close by the barn do not need to sow a spring crop to supply early green feed. The dairyman who does not have alfalfa to cut as green feed or to cure as hay to be fed during the summer dry spells, may use clover under favorable conditions, or he may

Some Good Soiling Crops.

Cow-peas and soy beans are excellent crops to be used for this system of feeding, commonly called soiling. They are hot weather plants, however, and should not be planted until the soil is warm and summer has come to stay, probably from June 1 to 20, in the southern part of the state, to July 1 in the northern part. These make excellent hay when cured and also have the added value that they add nitrogen to the soil.

Probably the best soiling crop, with the exception of alfalfa, is corn, which comes on soon after the oats and peas are gone. Common dent corn has sometimes been sown broadcast and cut with a scythe, and found to be very satisfactory as a soiling crop. One of the best and most commonly used kinds of corn for soiling purposes, however, is one of the large varieties of sweet corn of which Stowell's Evergreen is a well-known variety. It is usually planted in drills or hills more thickly than for grain and cut for immediate use from the roasting stage to maturity. It is sweet and palatable and greatly relished by cattle. None will be wasted and it is a great milk producer. This seed should always be tested, preferably in the ear if possible, because it is apt to have a low percentage of germination. If it is not tested until after being shelled, plant enough to allow for dead and weak kernels.

Put in a patch of sweet corn, Mr. Dairyman, close by the barn and keep up that milk flow! Prices are bound to be high both for feed and milk. We cannot afford to milk boarder cows. No

more can we afford to allow our good cows to become unprofitable because of the lack of a little extra care and feed at the proper time.

Mich. Ag. Col. J. A. WALDRON.

ANNUAL REPORT OF ALLEGAN COUNTY COW-TESTING ASSOCIATION.

The third year's work of the Allegan County Cow-testing Association was finished this month, and the results were very gratifying in many respects.

Our average production this year for 436 cows is 7,113 pounds of milk and 298.6 pounds of fat, and our average profit per cow was \$50.13. This means that the cows paid \$21,843.60 above feed cost, and brought in \$1.93 for every dollar expended.

Clarence Maskey's herd of Jerseys leads the association this year with the wonderful average per cow of 416.6 pounds of fat. This not only leads the association this year, but sets a new high mark, our previous one being 403.0 pounds of fat. Mr. Maskey's results are the logical sequence of breeding, feeding and weeding. His herd is an exceptionally well balanced one. Not a cow with full year made under 400 pounds of fat, and but one made over 500 pounds of fat. This herd has demonstrated its ability in semi-official work as nearly all are in the Register of Merit. A junior three-year-old made 458 pounds of fat and dropped a living calf during her year's work for the R. of M.

There were 368 cows that completed a full year's test. One hundred and sixty-one of these, or 49 per cent, made over 300 pounds; 48, or 13 per cent, made over 400 pounds of fat, and eight, or two per cent, made over 500 pounds of fat; 35, or nearly 10 per cent of the total gave over 10,000 pounds of milk; 20 gave over 11,000 pounds; ten gave over 12,000 pounds, three over 13,000 pounds, and one over 15,000 pounds. This last one was a three-year-old owned by H. A. Washburn and made 15,309 pounds of milk, and 544.6 pounds of fat, being beaten for fat production only by Mackey's Jersey, which gave 549.3 pounds of fat. Thirty-one cows gave over \$90 profit each for the year and 14 gave over \$100 profit each.

The three high cows for profit are as follows:

1. Counts Jesse 2nd, \$126.54 over feed cost. Registered Jersey of C. B. Wehners.

2. No. 7 Grade Jersey of M. L. Wilnot's gave \$124.95.

3. No. 9 Grade Jersey of C. B. Wehner's gave \$124.64.

The average for the five highest producing herds in the associations is as follows: Pounds of milk, 7,045; pounds butter-fat, 390.5; cost of feed, \$52.82; profit, \$82.82; returns for each dollar expended, \$2.57; cost per pound of butter-fat for feed, \$0.136; cost per 100 pounds of milk, for feed, 75c.

Allegan Co. ROBT. ADDY.

BUILDING UP THE DAIRY HERD.

Considerable discussion has been aroused lately over the high cost of milk production. Now, when the farmer is getting a price which will enable him to produce milk at a profit, it behooves him to pay greater attention to the building up of his herd.

The question is often asked whether a herd of pure-bred cows will not be a better investment than a herd of grades. The answer may be either yes or no, depending on circumstances. To the beginner a herd of pure-breds would mean a very large investment. The same would be true of the owner of a herd of mixed breeds who desired to make the change to pure blooded stock.

If the object in view seems to be milk production only, then the owner of a herd of good grades will have the advantage of the one with pure-bred stock. The investment is much small-

er and the production equally as great. On the other hand, if the value of the offspring is considered then the pure-bred herd would be a better investment. The best plan, however, would be to start with a pure-bred bull, a mixed herd, and add pure-bred cows from time to time.

In building up a herd two essentials must be considered:

1. Keep a record of each cow in the herd. This must be done accurately and systematically. There must be no guess work.

2. The selection of a suitable bull. In the selection of a bull it is not enough to get one with a good pedigree, he must have marked individuality and ability to get uniform offspring.

Even if the dams are of mixed blood the first crop of calves will be half-bloods and will be uniform. All of the heifer calves should be kept until they start to produce, when the weeding out process should begin. Circumstances may necessitate the selecting of the best females while calves. In this case calves of low producing dams should be discarded. Some breeders select calves from dams showing the greatest variation. There seems to be at least two objections to this method. First there is a chance that they will vary toward the bad as well as the good, and then, if the dam has shown a variable improvement, at some time she must have been a low producer and we would not want to select our stock from low producing dams.

The second generation brings up perplexing questions. If the herd sire is vigorous and has proven a good one, the owner does not wish to dispose of him and he has heard so much of in-breeding that he hesitates to keep him. What he wants is a uniform crop of calves. Now if he gets another sire to breed to his half-blood heifers, and this sire is of a slightly different type, he will get an offspring which will be three-fourths bloods but they will very much in uniformity. Taking into consideration the lack of the knowledge of the average brooder to mate types correctly the breeding of a sire to half-bloods of his own get would be preferred to the mating of another sire to the same half-bloods, when the other sire was of a different type.

The selection of the good females from the second generation becomes a greater task, since there will be more poor ones in the second crop. Discard the offspring of the low producers. As generations come and go the characteristics of the pure breed will be more fixed. Experience has proven that when a dam of mixed blood has been bred to a pure-bred sire that the offspring of the first and second generation shows a greater increase in milk production while the generations show a greater increase in type uniformity.

Gratiot Co. T. F. WEST.

BULL ASSOCIATIONS.

An official of the Department of Agriculture has been assigned to the promotion of bull associations, the object of these organizations being to furnish pure-bred bull service at small cost through co-operative ownership. A survey of the field showed that about fifty associations had been organized during the last nine years, of which about twenty-five had discontinued operations. The causes of failure were found to be chiefly poor business management and the lack of local leadership. As a result of a study of both active and discontinued associations plans were formulated by this specialist for embodying their good and eliminating their undesirable features. In these associations, in sections representative of varied conditions, new plans are being tried out under careful observation before any large movement for pushing bull associations is undertaken.



COW OWNERS

EXPECT MORE FROM A

DE LAVAL

- more cream
- longer wear
- better service
- better value,

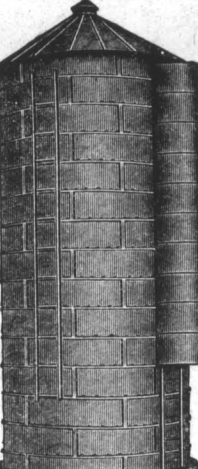
AND THEY GET IT

A catalog of the NEW De Laval Machines will be gladly sent on request, and if you don't know your nearest local agent please simply address the nearest De Laval main office as below.

THE DE LAVAL SEPARATOR CO.

165 Broadway, New York 29 E. Madison St., Chicago

50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER



ROSS METAL

In-de-str-uct-o SILO

The Silo that fills a long felt want. Results obtained from the use of a Metal Silo are far beyond expectation. Silage contains by far a larger percentage of food value, more uniform preservation, taste and color, naturally far more productive in results. The Most Permanent Silo because it

Can't Blow Down, Buckle, Twist or Collapse

Resists fire to the fullest extent and is storm proof. No skilled labor required to erect it. Can be increased in height at any time. Special IN-DE-STR-UCT-O Metal is warranted not to be effected by acid in silage or climatic conditions. The users of Metal Silos are our references. Our Testimonial and Construction Catalog is worth asking for, especially to those who desire to erect a Silo from the standpoint of permanency and 99% food value preservation. Agents wanted who are able to produce results.

THE E. W. ROSS CO. Box 314 Springfield, Ohio

Est. 1850-67 Years Experience

We also make Ross Wood Silos and Ross Silo Fillers

GET MY PRICES

BEFORE YOU BUY BE sure and get my prices! Before buying a separator or tractor of any make, or kind, or price, please ask for and read Galloway's 1917 catalog—the biggest, most important book and greatest money-saver for my customers I ever put out! Get my proposition to you and compare it with all others; then be your own judge! We are actual manufacturers and sell direct to you from our factory. We specialize on the lines we offer. We were first to offer engines, separators, spreaders direct from the factory at one small profit. We have made the manufacturing and selling of these lines a life business. You can't afford to buy a gasoline engine or any of the other Galloway lines until you first get our prices and our proposition. Get my price before you buy! Cash or Time.

HERE'S THE REAL PROOF!

I can't give it praise enough. I had a 6 h. p. Galloway engine belted to my 16 in. corn mill and it does the work, where an 8 h. p. of another make did not. M. P. STORMARK, DECATUR, ILL.

My 6 h. p. Galloway was 5 yrs. old this fall. Works perfectly—good for 15 yrs. yet. HAROLD W. BARNES, DELPHI, IND.

It has not cost me one cent for repairs. Am now buying a 2 1/4 h. p. engine and washing machine for the home. Consider the Galloway simplest engine made. ADOLPH DRINOVSKY, TRAER, LA.

I found the 16 h. p. Galloway simplest, most powerful, best governed engine I ever saw and \$225 cheaper. HENRY WENHAM, MILTON, WIS.

THE WM. GALLOWAY CO., 185 Galloway Station, Waterloo, Iowa

When writing to advertisers please mention the Michigan Farmer.

A NEW INSECTICIDE FOR CONTROL OF CODLIN MOTH.

(Continued from page 541).

The above results would indicate that the nicotine sprayed trees graded up better and the fruit hung on the trees much better. There was also noticeable effect in the control of the scale where nicotine was used, and the fruit seemed to have better color than when lead was used. The price per tree for spraying with nicotine was 68 cents, for lead spraying 41 cents.

At present prices it would not be practical to use nicotine sulphate for codlin moth alone, but if control measures for the aphid is necessary its use would undoubtedly be practical. As the tendency of arsenate of lead is toward higher prices, nicotine sulphate may prove economical for codlin moth control.

While the addition of soap to the nicotine-lead combination proved to have a burning effect the use of soap in nicotine alone proved beneficial. The soap used was fish oil soap. Two pounds of it dissolved in a gallon of water is equal to four pounds of hard soap.

TROUBLE DEPARTMENT.

Liquid Grafting Wax.

I saw a recipe for making grafting wax in the Michigan Farmer several years ago. One of the ingredients was lamp black, and the wax was to be applied with a brush while warm.

Allegan Co.

V. K.

The grafting wax to which you refer is called walnut grafting wax, and is made as follows:

Resin, five pounds; beeswax, one pound; charcoal one-half pound; raw linseed oil, one-quarter of a pint.

Melt the resin and when entirely melted add the beeswax which has been shaved up, and after the beeswax is melted add the charcoal and stir thoroughly. When the charcoal has been thoroughly mixed in, the wax should be taken from the stove and the linseed oil added, and the mixture thoroughly stirred again. The wax should then be poured into a greased pan and allowed to become cold. When cold it is a hard, smooth, black cake.

When it is to be used a chunk should be chipped off and melted and put into a small pail. If the weather is cold or if the grafting is going to take a long time, the pail should be set into a bucket having a small fire of oak chips, in order to keep the wax in a melted condition.

For applying use a small paint brush and simply paint the wax over the wound on the stalk, over the splits down the side, and touch the tops of the cions.

CUCUMBERS DO NOT CROSS WITH MELONS.

Many people still believe that cucumbers and cantaloups cross-pollinate to the detriment of each. But this is now known to be a mistake. There is no reason, therefore, why growers of these plants should keep their plantations separate, even when they desire to save seed of either one or the other. Experiments have proved that the two may be grown in alternate blocks without impairing the quality of the plants or fruits produced from the seed.

M. G. KAINS.

BOOK NOTICE.

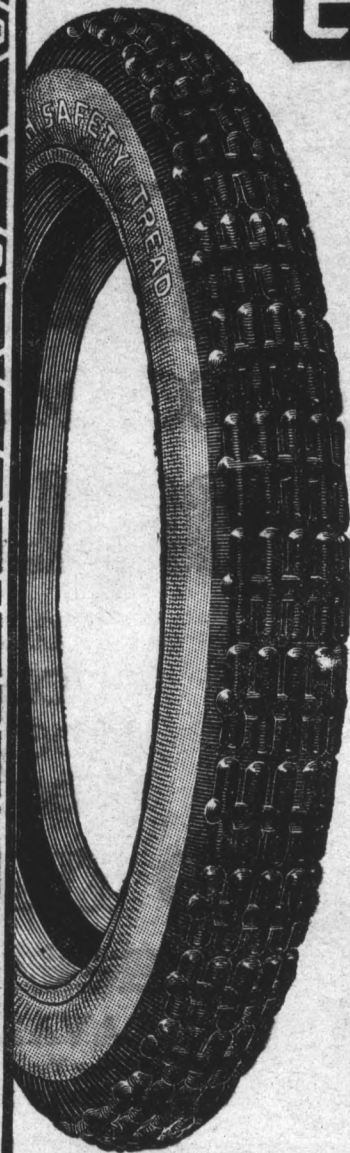
One of the essentials of successful fruit growing is the control of fruit diseases. "Manual of Fruit Diseases," by Lex R. Hesler and Herbert Hice Whetzel, gives all known facts regarding fruit diseases and their control and is written to be of practical value to the fruit grower and farmer. It is well illustrated and the descriptions of causes, symptoms and control are very explicit. This book of 460 pages is published by the Macmillan Company, of New York, and can be purchased through the Michigan Farmer for \$2.

Fair List Prices



Fair Treatment

What You Get With GOODRICH BLACK SAFETY TREAD TIRES



HAVE you ever taken stock what you get WITH as well as IN a Goodrich Black Safety Tread Tire?

You know, of course, you get the *best non-skid fabric tire*, the oldest, largest, most skillful rubber manufacturer can make, and get it at the *low standard ONE-PRICES* of the *Goodrich Fair List*.

You know you get the toughest tread, rubber compounding has yet produced, and all the seven cardinal tire virtues—style, comfort, safety, economy, durability, freedom from tire trouble, and mileage—IN a Goodrich Tire.

But have you looked deep into the Goodrich *pledge of perfection*, and *Goodrich Fair Treatment*, which go WITH each Goodrich tire, and require a service worthy of the good name the tire bears?

Goodrich Tires Must Make Good

If, as occurs in rarest instance, a tire fails to render its service, the B. F. Goodrich Company is more eager than you that its short-coming be made good.

Bring back a Goodrich tire that owes you anything: is Goodrich's invitation to the world.

Goodrich Fair Treatment at once cancels any debt of a Goodrich Tire—makes good quickly, generously, and gladly.

Certainty of utmost service is what you get WITH a Goodrich Tire

ORDER THROUGH YOUR DEALER

The B. F. Goodrich Rubber Company
Akron, Ohio

Also maker of the Tires on which Dario Resta won the official 1916 Automobile Racing Championship—
Silvertown Cord Tires

SILVERTOWN'S DOMINATION OF 1916 AUTO RACING

The 1916 automobile racing season brought forth amongst a half hundred Silvertown victories the following especial triumphs of the *ONLY two-ply, cable-cord tire*: National Automobile Racing Championship, won by Dario Resta with 4100 points, 15,582 points scored toward the championship by Silvertown to 7,176 by ALL its competitors COMBINED. Eighty per cent. of all the prize winning positions of A.A.A. sanctioned races, 31 First to 5 Firsts by ALL its competitors.

Where You See This Sign,
Goodrich Tires are Stocked!



Ask Your Dealer for Them.

"Best in the Long Run"

Farm Hands Wanted Western Canada Farmers Require 50,000 American Farm Laborers AT ONCE!

Urgent demand sent out for farm help by the government of Canada. Good wages. Steady employment. Low railway fares. Pleasant surroundings. Comfortable homes. No Compulsory Military Service. Farm hands from the United States are absolutely guaranteed against Conscription. This advertisement is to secure farm help to replace Canadian farmers who have enlisted for the war. A splendid opportunity for the young man to investigate Western Canada's agricultural offerings, and to do so at no expense. Only those accustomed to farming need apply.

For particulars as to railway rates and districts where labor is required, or other information regarding Western Canada, apply to

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

SEED CORN 7 varieties—90, 100 and 110 day corn, all northern grown; full line farm seeds—everything guaranteed. Cfr. free. C. H. & J. GRAVES, Antwerp, O. (Paulding Co.)

Fruit Trees and Garden Seeds, Guaranteed true to name at an honest price. Send for catalog. Allens Nursery & Seed House, Geneva, Ohio.

Grow Better Fruit

Are you prepared to fight Aphids, Red Bug and other similar pests that are reducing apple profits? Black Leaf 40 (Nicotine Sulphate) is used by leading growers. Recommended by Experiment Stations.

THESE BOOKLETS WILL HELP YOU Just what you need to know to control Aphids—which are very destructive in many districts—and other sucking insects. Valuable spray chart included. Information worth many dollars FREE. Write today.

The Kentucky Tobacco Product Co., Incorporated
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Black Leaf 40
40% Nicotine

Kills
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Choice Northern Grown
SEED POTATOES
DORR D. BUELL,
The Seed Potato Man of the North
ELMIRA, OTSEGO CO., MICHIGAN

Seed Corn Reid's Yellow Dent, Early Leaming and White Cap, 22.50 bu. Samples & catalog free. Theo. Burt & Sons, Melrose, Ohio.

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

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

The **FARM BOY**
and **GIRL**
SCIENTIFIC and
MECHANICAL

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

RAYMOND BONHEUR was an artist and lived in that fine old city of Bordeaux, in France. Like most artists, he found life rather hard. He must have food and clothing for himself and wife and no one seemed anxious to buy his pictures, or even take them in exchange for bread and vegetables. In the year 1822, a little girl was born to this artist, and while she was gladly welcomed by the mother, her father would have nothing to do with her, for had she not disregarded his wishes and come to him a girl instead of the boy he wanted? Of course, she should have been a boy, anyone would know that, for then he

Rosa Bonheur, the Animal Painter

By MARY L. DANN

could have taught her to paint all the beautiful things he had in his mind but could never get into his pictures. He scolded and stamped and fumed and scared his wife and baby nearly out of their wits. This little girl was named Rosa. Other children came to the artist until there were four little Bonheurs, and then the mother died. Raymond Bonheur scattered these children among his uncles, cousins and aunts, wherever they were willing to take one, and he kept on painting and

the people kept on refusing to buy his pictures.

When Rosa was ten years old, she began to draw pictures of animals and her father laughed at them. When she was twelve years old, it was decided that she must learn dressmaking, but she hated it. One day she threw down her sewing, made a face at it and walked from the room and straight over to her father's studio. She begged him to teach her to draw and paint. She declared she could never learn to sew

wobbly old seams and that her button-holes always puckered so they looked ready to whistle.

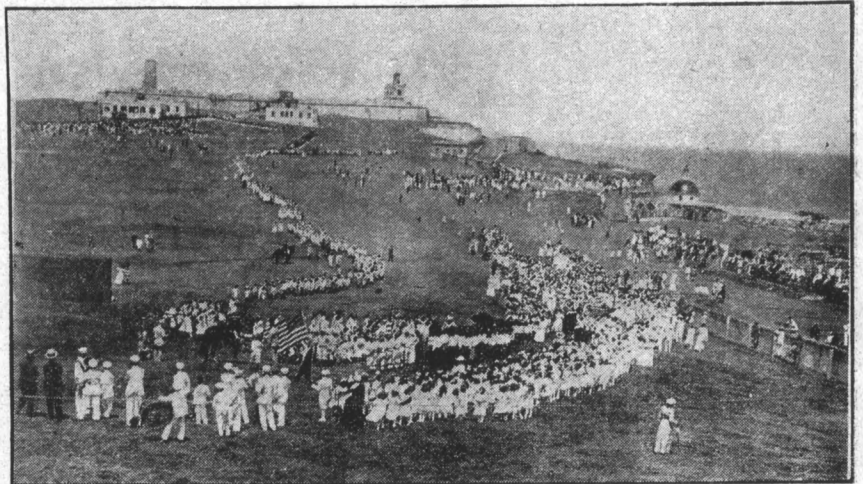
Raymond Bonheur and his daughter soon became familiar figures in the art gallery, where they made copies of famous pictures. Other artists slyly poked fun at Monsieur Bonheur for having a little girl with yellow braids help him to mix his paints. Rosa became angry and cut off her braids and put on boys' clothing. She liked it so much better than her own girlish outfit that she continued to wear it, for Rosa was a very independent little girl.

The pictures copied by Rosa Bonheur began to sell, while those of her

WORLD EVENTS IN PICTURES



Townfolk in Territory Recently Occupied Welcome the English and French.



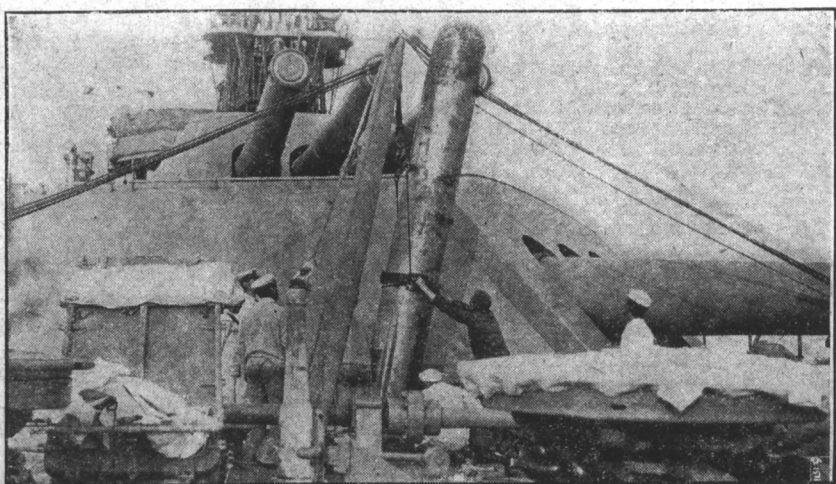
All Porto Rico Turned Out to Celebrate when Granted U. S. Citizenship.



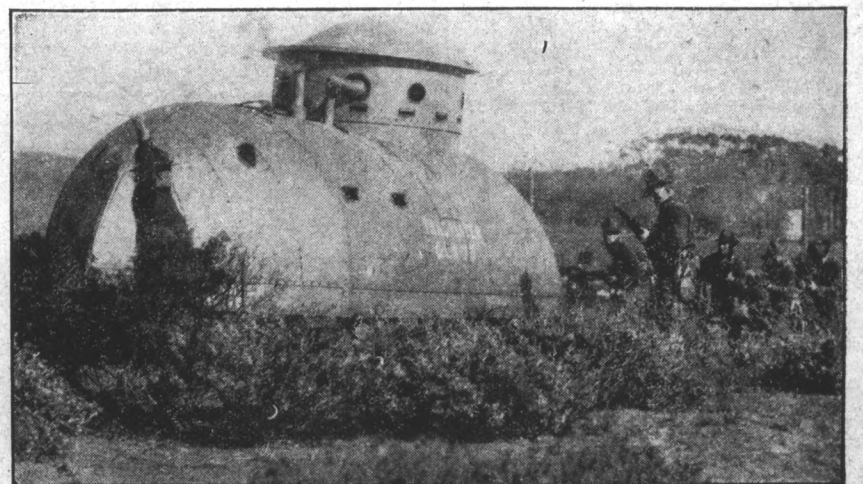
Russians Rejoice when the Old Government Gives Way for the New.



Chaulnes as it Appears After being Abandoned by the German Troops.



Lowering a 21-inch Torpedo into its Place on the Battleship Pennsylvania.



Citizen Soldiers of California Present Uncle Sam with a Land Battleship.

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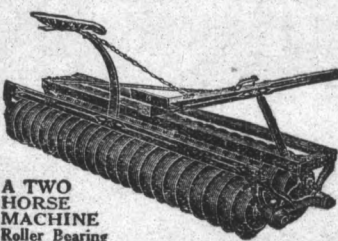
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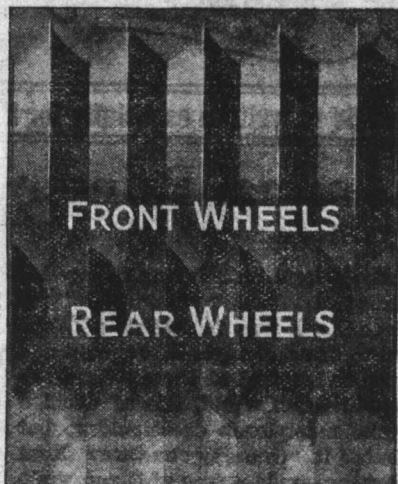
The Culti-Packer does every one of the three things necessary to save moisture in dry seasons—it pulverizes the soil, firms out all large air spaces and stirs the surface to form a mulch.

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Perfection Septic Tank

Write for folder and detailed explanation.

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Land at \$50 and \$100 per acre is too valuable for pasture. We have 474 acres at \$5.00, trout stream through it, 8 miles from West Branch. Good neighborhood, good land, good water, good title and abstract. Land in large body hard to get. Act quick if you want it. We also have many 40 and 80 acre tracts. Write for list.

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father remained on his own walls. When she began to paint pictures of her own, instead of copying and trying to please other folks, as her father had done, she painted to please herself. Her pictures were of one kind—animals, always animals.

When she was eighteen years old, she painted a picture of rabbits, which was hung in one of the great galleries of Paris. Then she coaxed a farmer to let her paint his cow, and when a collector offered her three hundred francs for the picture, the farmer whispered, "Take the money quick, for the blessed cow herself isn't worth half that."

At the age of twenty-eight, she painted The Horse Fair, which was such a wonderful picture that the whole world began talking of Rosa Bonheur, and pictures of her, dressed in men's clothing, were printed in newspapers and magazines everywhere. As we look at one of the many copies of the famous "Horse Fair," we shall probably be surprised to learn that the models for this picture were all cart horses picked up around the streets of Paris.

Many of Rosa Bonheur's canvasses sold for a small fortune. One writer who saw a picture of her St. Bernard dog, which she had drawn on the brown papered room of a French artist, declares it was so natural that he whistled to it and told the owner she ought to pay a dog tax on it.

Rosa Bonheur's home was a strange old mansion at the base of high hills, near the little town of By, in France. It had a red tiled roof and was surrounded with beautiful trees. Here she lived with her two servants, her St. Bernard, a half dozen cows and two shaggy ponies. The ponies she drove hitched to a funny old basket phaeton. She never curled her hair or powdered her nose and would not have gone to a pink tea if any lady had dared to invite her. However, living simply and quietly as she did the French Emperor, Napoleon II and the Princess Eugenie went to By and up to the old mansion and pinned on queer, little Rosa Bonheur the Cross of the Legion of Honor, the first one ever given to a woman. She died in 1899, beloved and mourned by the whole world.

The Farmer's Response to President Wilson's Call

We are plowing, Father Wilson, the seed will soon be sown;
We'll have the largest acreage that ever yet was known.
We're bound to fill the granaries, we'll scarcely stop for sleep
Till the elevators bulge with a bumper crop of wheat.

The Army and the Navy shall have no hunger dreams
If they will do the fighting, we will furnish pork and beans.
And we'll do it not for glory, we'll do it not for greed,
Because we love our country and realize her need.

We'll load the ocean freighters for the people o'er the sea,
And feed the allied armies till the nations all are free;
And the Kaiser and his armies shall pray for terms of peace,
And old Belgium's resurrected and the world wide war shall cease.

Then pray the Lord of harvest for the sunshine and the rain,
And the finest kind of weather to ripen up the grain;
For except the Lord shall help us, 'tis no use to plow and sow,
Man can do a lot of seeding, but the Lord must make it grow.

C. R. COOK.

"Contraband" RANDALL PARRISH

Our New Serial

Third Installment

"Really, I must have nearly talked city. The very nature of your life you asleep," I said regretfully. "I do has left you frank, and straightforward. You talk to me just as you would to a man. Most men try to be funny and entertaining, as though I was a baby to be amused. I hate that! I am not so young I cannot think and feel."

"Do not say that. It was most interesting. It is nice to be spoken to, as though one was an intelligent human being—it is quite an experience."

"Perhaps I do not understand."

"Doubtless not, for you are not a girl and you tell me you never sought so

"If my frankness has interested you," I ventured, "can you not realize how much I desire to learn more—who you are, why you are here?"

"Of course; but I cannot tell you, Mr. Hollis—not yet."

She looked at her wrist watch, holding it out into a star-gleam, which revealed the white shapeliness of her arm.

"I dare not even remain here with you longer."

"But you will come again? This is not to be our last meeting?"

She hesitated, her eyes meeting mine almost kindly; then she held out her hand.

"The last—yes, in this way. You will meet me again, but not as we have tonight. I have truly enjoyed being with you, of hearing your story, but this meeting here alone was not my choice. You understand I could not avoid it, and after I was discovered, I had to remain and win your pledge to secrecy. You will not forget that?"

"Assuredly not. You will not return to the deck tomorrow night?"

THE BELLS.

BY L. M. THORNTON.

I wandered out adown the street
And from the city's ways;
I watched the twilight shadows fall,
A mystic purple haze.
I heard across the distant hills
The church bells soft and low,
And to my ears they were the same
That called me long ago.

I doffed my hat, I bent my head,
Forgotten paltry gains,
The things I long had counted great,
The fruits of toil and pains.
I only heard the tender bells
Their magic arts employ,
I only heard the call I knew
And followed as a boy.

Again for me the rush of life
Shall sound its clarion call,
I'm eager for the stress and strife
Where fortunes rise and fall.
But, sometime, at Life's twilight hour
However far I roam,
I know the softly chiming bells
Shall sound to call me home.

She laughed softly, and withdrew her hand, which I still held.

"Tomorrow night! Oh, I cannot tell; we may be far enough at sea by then so I need no longer seek fresh air by night. I told you my concealment was only temporary. "But," and her voice became serious, "if I deem it necessary to continue this masquerade, you would not keep me a prisoner below, I hope?"

"You mean that if I wait for you here, my presence will banish you from the deck?"

"Yes, for that would be an appointment, a pre-arranged meeting to which I could not consent. It would cost me your respect."

"Never," I protested, "nothing could lead to that. Strange as all this mystery is, I believe your actions justifiable. I do not even ask an explanation."

"You have, indeed, been very kind, very considerate. I cannot thank you enough. Surely you will grant this last request also?"

"That I will not seek you again alone?"

"Yes; but there is no need to repeat the request; you are a gentleman; good night, Mr. Hollis."

The gray dress she wore left upon me the impression that she faded from sight, her dim outline vanished so suddenly amid the shadows. I took a swift step forward, impelled by an irresistible desire to ascertain in what portion of the yacht she found concealment, yet paused almost as quickly. Her last words had been those of faith, of confidence, and I would be guilty of no act to change her good opinion. She had given me her pledge that her purpose on board had no evil motive; that, within a day or two at most, she would appear openly, and clear up the apparent mystery. I could not front the frank honesty of her eyes, or listen to her voice, without being convinced of her truthfulness. Who she was, and why she had chosen so unconventional a manner of joining us, was beyond my guessing. I essayed many a theory, yet one after the other, all broke down and left me groping in darkness. Only one fact remained steadfast, to which I would cling with confidence—the girl was no mere adventuress, no criminal; she was doing nothing of which she was in the least ashamed, nor had she the slightest fear of consequences.

The after deck was deserted as I went below and sought my stateroom. In the berth I lay and thought, but to equally poor results. Word by word I reviewed our conversation, endeavoring to recall some expression which might yield me some faint clue. The name, "Vera," haunted me with tantalizing memory, yet I could not bring back from the past its association. Still endeavoring to recall the list of acquaintances in hope of thus touching some spring of recollection, I lost consciousness and slept.

I slept so soundly as to be the last guest at the breakfast table the next morning, although as I sat there alone Fosdick returned from the deck to the cabin, seeking a rain coat, and reporting a heavy fog, through which the yacht was proceeding slowly. He paused to exchange a few words, resting on the arm of a chair, smoking. The vessel was still within easy view of Montauk, or had been before the mist shut down, but the really important news had come to Carrington by wireless—positive information of the outbreak of war. Russia and France were pitted against Germany and Austria in the death grapple. The German troops had already begun an invasion of Belgium on their drive toward Paris. It was still unknown what course England would take.

The nature of this news obscured all else, and left me unable to complete my meal. Other messages were momentarily expected, and I dressed hastily, and joined the little group on the

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and See the "Z"

Inspect it. Compare it. Match it point by point. Have him show you the features that make it the greatest engine value offered. You'll buy it.



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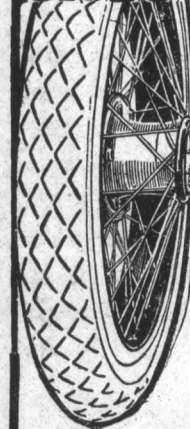
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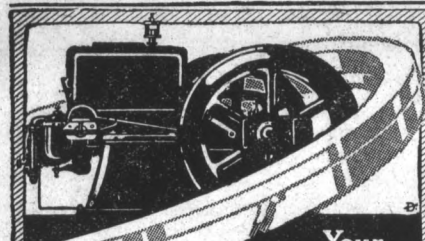
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34x4	16.10	17.55	3.75
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deck. It was a raw, disagreeable morning, the fog shutting in close about us, an impenetrable curtain, the yacht nosing its way forward with utmost care, its siren wailing out every moment in warning. From the companion I could barely distinguish the outlines of the bridge enveloped in folds of vapor, and oversee perceive a narrow lane of frothy water. The air was heavy with moisture, and the passengers on deck were huddled beneath the protection of the awning, their interest in the receipt of news alone keeping them on deck. I joined them just as a cabin boy handed Carrington a new message. He read it, crashing his clinched hand down on the rail.

"It's all over with now," he exclaimed, holding the paper aloft, and gazing about into our eager faces. "England declares war, gentlemen. She will stand by her treaty with Belgium. Here is our opportunity; listen to me. This is going to be the greatest war in history; every nation in Europe may be involved before it is ended. Do you realize the commodity most in demand, the one metal those armies cannot get along without? It is copper. They must have it, and they must buy it of us. This morning, as soon as I received that first dispatch, I wired my agents to buy, buy, buy. Now, with England in, the result is certain."

He paused, and studied the faces in the group.

"Gentlemen, there is wealth enough here on this yacht to control the entire copper output, if we work swiftly. The profit will be enormous. I have the campaign all mapped out; I know where to buy, and my agents are ready to execute my orders. I am going to say to you frankly that I had this thought in mind when I first organized this cruise. I invited you to join me very largely because of what you represent in the business world. I believed this crisis was approaching, and prepared for it. I wanted you men together, away from every other influence, where you could make quick decision. Our very absence from New York, which has been widely advertised, will tend to allay all possible suspicion that we are influencing the market. By wireless we can operate surely and secretly, with no possible fear of betrayal. The only question is, are you ready to back me up?"

The expressions on the faces of those gathered about him reflected the varied characters of the men. They were alike startled by the unexpected turn of affairs, yet financial greed evidently predominated. Even the one German in the group had seemingly forgotten his nationality in view of the golden bait dangling so temptingly before his eyes. Fosdick, actuated by his lawyer instincts, and still cool, and calculating, was first to question the proposition.

"You are perfectly assured of being able to control the market?" he asked.

"I already practically control," returned Carrington confidently. "With a little more capital the game is certain. My agents have everything buyable located, and a price put on it. All I need do is order the deals closed. In twelve hours, gentlemen, we can have the copper situation entirely in our hands. Here are my holdings individually. This morning, by wireless, I acquired options on twenty-five per cent more. I need your help to close the deal."

They bent over the papers, eager to grasp the truth, but abundantly satisfied with a quick glance at the magic figures. It was evidently enough a master stroke, a business deal easy to comprehend, and all that remained for them to do was to take their profits.

"You—you return immediately to New York?" questioned McCann, his lips trembling.

"Certainly not; our game at present is to keep out of sight; permit no one to discover who is behind the movement. Your personal checks will sat-

isfy me. I propose holding the yacht, say a hundred miles from shore, and conduct the entire business by wireless. That makes it safe and sure."

The group of financiers started at each other, one waiting for the next to voice decision. Fosdick, as usual, took the initiative.

"I'm heartily with you, Carrington," he said frankly, "you can count on my check for \$100,000 right now."

"And I," "and I," echoed from lip to lip. "It looks like mighty easy money," added McCann, "and I need a little."

Carrington smiling pleasantly, turned toward me.

"And how about you, Hollis? Coming in with us? We ought to have one Chicago representative, you know."

I shook my head, doubting my ability to produce the amount required off-hand.

"Not today, give me a few hours to think it over. I should like to talk with you privately first."

"All right; we shall have enough without you, but I'll hold the chance open until you do decide. Let's adjourn to the cabin, gentlemen, where you can draw your checks while the steward opens a few bottles. This is an occasion to be celebrated."

We were upon our feet, not unwilling to escape from the raw air, when the voice of the lookout sounded muffled, but distinct, far forward.

"Sail ho!"

"Where away?" echoed the bridge.

"Off the starboard bow, sir—a big one."

We gathered at the rail staring out blankly into the smother. Then suddenly the mist seemed to roll asunder as though cut by a knife, and there in the rift, as if the fog were a frame, appeared one of the finest sea pictures I ever remember seeing. A huge iron warship, her funnels belching smoke at full speed, the white spray racing along her sides, swept into view. We had a glimpse of the black muzzles of guns protruding from forward and after-turrets, of groups of sailors on deck and in the fighting-tops; a white-clad officer leaned over the bridge-rail. There was no flag; nor did we need one to know for what she stood. It was the vision of an instant; then the fog closed down between us, and the speeding monster was gone. Carrington pointed out into the blank mist.

"There goes one of your bulldogs now," he said. "That fellow has his orders already. In five hours more not a German liner will dare leave New York."

CHAPTER V.

The Wreck of the "Esmeralda."

WE passed the greater part of the day below, and long before night came, a heavy, sweeping rain set in and kept us there. I never recalled a more blinding, disagreeable storm at this season of the year, and in those waters, although there was very little wind or sea accompanying it. The smother, however, made it safer to proceed at half-speed, and the lookouts forward were doubled. Every time I ventured to peer through the glass of the companion I distinguished the burly form of Captain Turner on the bridge, his oilskins glistening with moisture.

It seemed a long evening, as I was in no spirit for cards, and discussion was altogether about the war, and the projected copper pool. Carrington received several messages in further proof that the affair was already well under way, but he made no other attempt to arouse my interest. I had no expectation that the girl would venture on deck in the face of the storm raging, but her pledge to make her presence known to those on board so soon as we were safely at sea, kept me up until a late hour. The possibility of her sudden appearance, and explanation, rendered me nervous, and sleepless, but my watchfulness brought no reward. By ten-thirty I had retired



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to my stateroom, as I decided that it was useless to wait any longer. Yet even there, and when partly disrobed, a temptation to explore the decks again assailed me. I unscrewed the port and glanced out, the cold rain driving hard against my face. Nothing could be seen; I stared into an impenetrable black wall. There was evidently nothing to do but remain where I was, and I closed the port and lay down in the berth.

I had passed too many black nights at sea to be kept awake by any haunting fear of possible accident. There would be watchful eyes aboard, on bridge and fore-castle, and there was no storm, merely a quiet surge of waters, through which we were steaming slowly. To be sure, by now the Esmeralda must be close within the ordinary track of the great liners bound for northern Europe, and the thought of collision occurred to me, but was as instantly dismissed. Yet I remained restless, and it must have been considerably after midnight when I finally fell asleep.

I do not know what aroused me, but I sat up suddenly, wide-awake, a strange ill-defined fear clutching at my heart. What was it I had heard, a cry, a blow on the deck above, had I really heard anything, or was it merely the echo of a dream? The stateroom was dark as Erebus, but I got my feet over the edge of the berth, and switched on the electric light. Even as I stood thus, my hand still on the switch, someone ran swiftly across the deck directly overhead, and a voice wavered out:

"Port, sir! Hard-a-port—my God!"

There was a startling crash forward, the awful sound of crushing iron, and splintered timbers. I was flung headlong against the partition, barely saving myself by outstretched hands, but falling bruised and helpless to the deck. The electric flashed out instantly, but a dull gleam from without streamed through the glass of the port. It was a ghastly green light, and I recognized it at once as the port lantern of the ship which had rammed us. Before I could get to my feet even, still dazed and trembling from the shock, the ghastly green radiance began to recede. Rage took the place of fear—the cowardly murderer was backing off, was leaving us to sink! I clawed my way across the stateroom, seeking to gain view without, but could perceive little. The glass was dimmed with moisture, and through it I could see merely the circle of green light revealing the outline of a high bow. No other gleam was visible but above me a man cursed hoarsely, and then screamed out some order which I could not distinguish.

All this was the work of an instant. What had occurred was as clear to my mind as though I had actually witnessed the scene from the deck above. A great steel steamer, a tramp, no doubt, from its darkened decks, had plunged out of the blackness, and rammed her bow straight into us. The contact must have been well forward, near the bridge. We were going down by the head; already I could perceive the list, the deck under foot was tilting; the engines had ceased to throb, as though the inflow of water had reached the boilers. Feet scrambled along the deck, overhead, voices yelled, and I could hear the creaking of boat tackle.

Working desperately in the dark, scarcely able now to keep my feet on the slanting planks, I hastily drew on what bits of clothing I could find at hand, and felt my way blindly to the door. It was jammed, but I kicked it open, and stumbled forth into the main cabin, clinging to the door frame in order to retain my feet. A smoking lantern swung to a beam, throwing a dim glow over the interior, revealing a scene of utter wreck. Everything had been wrenched loose, and flung forward—chairs, books, piano, hurled against the bulkhead, and blocking the stairs. The bookcase had toppled over,

the shattered glass of its doors strewing the deck, and, just beyond, lay the dead body of the steward, the whole back of his head crushed in, his white jacket ghastly with the stain of blood. Beyond, half way up the stairs, his face hidden from view in his arms, lay another man, clad in pajamas. The stateroom doors stood wide open, but no living being was visible. All who survived that first shock must have fled to the deck in mad struggle to escape. Ay, and there was desperate need for me to join them. The Esmeralda was going down; already her forward hold was filled with water, the bulkheads alone keeping her afloat; once they gave way, she would sink like a stone.

I crossed the cabin on hands and knees, clawing my way desperately through the litter until I attained the stairs. These no longer led up, but forward. Beyond was utter blackness, silence; and through the shattered door drops of rain splashed. I had to creep over the dead body, and caught a glimpse of the man's face, scarcely recognizable in the dim light; the short gray beard alone gave me certainty he was a banker named Case. I had played cards with him a few hours before, but he was dead now—I made sure of that, although there was no visible mark on him. I remember all this; the picture of that cabin, with all its horrors, is as clear before me as though etched, and yet I crept through it dazed, and scarcely comprehending my actions.

It was not until I had made my way to the outer deck, and felt the night air and rain on my face, that I truly awoke to the danger. The tilt of the yacht forward was so sharp, I dare not release my grasp of the rail. I could scarcely see anything; not a light burned, not even a distant star glimmered; the driving rain blinded me, and soaked through my shirt to the skin. The only thing I could perceive, shading my eyes as I stared, was a green light showing far away to the right, the reflection of which barely revealed our starboard rail crushed and splintered, and masses of water already surging aft of the main hatch. It was a sight to take the heart out of any man; the gloom, the silence, the death clutch of those waves almost at the companion, the sharp slope of the yacht's deck, the dead, sodden feeling under foot. I scarcely dared move, for to release my grip was to slide down into the black water, into the rifle of spars and ropes forward. It was all horror and death that way, but from aft, under the awning, a sound of excited voices reached my ears, and the rasp of boat tackle. No doubt all on board, who lived, were there, seeking to escape. They had sprung from the open deck at the first alarm, not even waiting to dress, and, if I would join them, there was not an instant to lose. The after bulkhead could not hold out long; any moment, any unusual roll of the sea, would rend it asunder, and the Esmeralda would sink. Life hung on seconds; nor would those frightened wretches wait to learn the fate of any others aboard.

Clinging to every projection of the cabin, I attained the port rail. The stanchions formed a species of ladder by means of which I could clamber aft, but, even as I attempted the first step, a voice called to me from out the black depths below, and I hung there, staring behind me, unable to perceive a thing, excepting a litter of tangled wreckage.

"Don't leave me! give me a hand."

"Who are you?"

"McCann; you are Hollis, ain't you?"

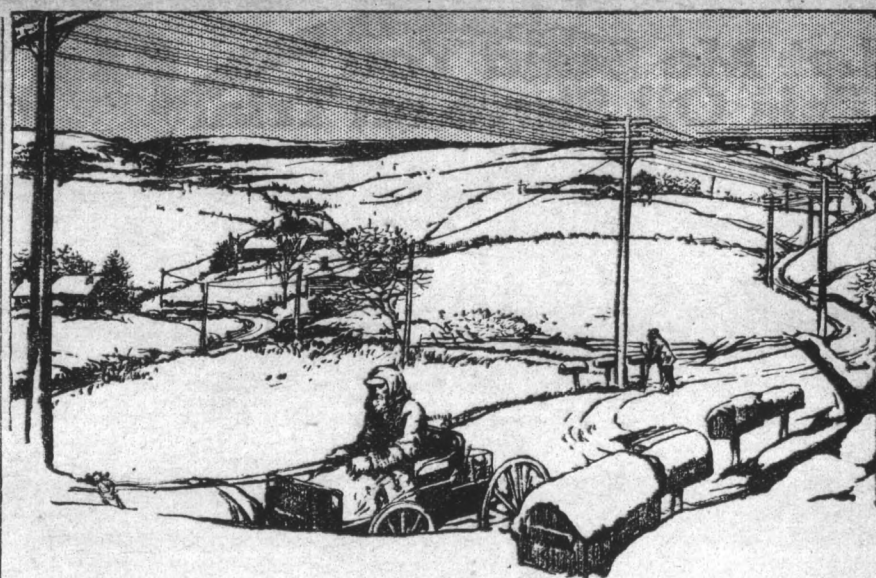
"Yes; are you hurt?"

"No; bruised a bit, no doubt; my foot is caught under a spar."

"Alone?"

"The second mate fell with me; he's down below—dead, I guess."

(To be continued.)



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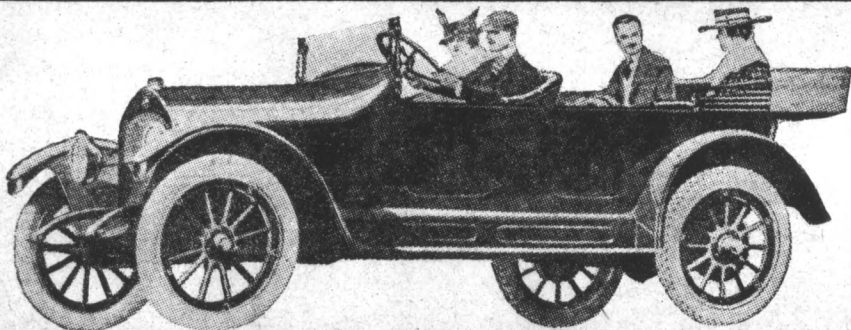
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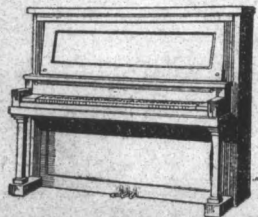
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Woman and Her Needs

Where Silence Is Imperative

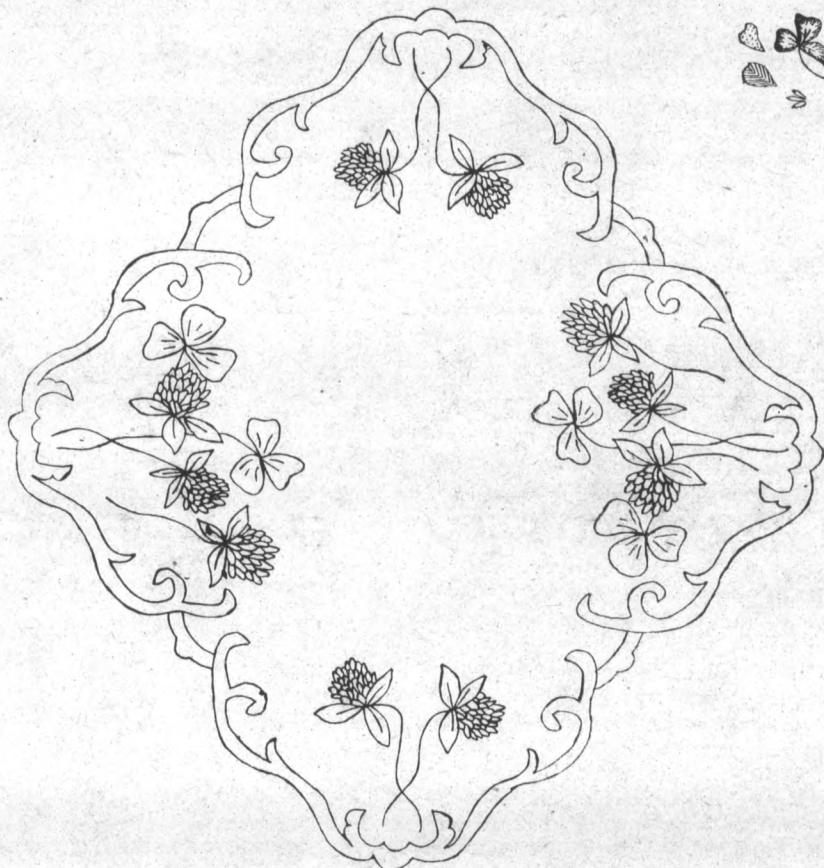
I TOLD you that in strictest confidence," John stormed angrily, "and now everybody in the neighborhood knows I want Old Baxter's farm. If someone doesn't buy it before he hears about it and then raise the price on me, he'll hear it himself and I'll have to pay \$20 an acre more. Why didn't you keep it to yourself?"

"But I only told one person," Grace protested. "I just happened to mention to Minnie Snelling that you'd like to own it. I never said you intended to buy it."

"Minnie Snelling!" John snorted. "You might just as well have written it up for the county paper, and you know it. You 'just happened' to mention it to her and she 'just happened' to stop at every farm from here to town and tell 'em John Ludlow was going to buy

a gentleman. Plenty of wives told more important things than that and their husbands never scolded and took on like tyrants.

But when days rolled into weeks and John still stuck to his policy of keeping his own counsel, Grace's faith in the absolute right of her own course began to waver. They had always talked everything over, and she missed the comradeship. John no longer sulked, he could not remain bad-tempered if he tried. He was once more whistling and joking, and willing to talk about the war in Europe. But when it came to personal affairs he kept a stubborn silence. Grace was at first amused. John thought he would teach her a lesson, she smiled to herself, the day he brought home a tractor without telling her he intended to buy one.



A Unique Centerpiece Design of Embroidery.

old Baxter's farm. I'll keep things to myself after this. If a man can't trust his own wife who on earth can he trust?" And with a bang of the door that shook a plate off the pantry shelf, John stalked off to the barn.

"Ugly old brute," Grace exploded as she picked up the remains of her favorite plate and put them in the rubbish basket. "It's too bad he can't trust his wife! I didn't tell Minnie he was going to try to get the old farm. I just said he'd like to own it. I'd like to own a limousine and a baby grand, but I don't expect to so long as I live with an old miser like him that only thinks of buying farms. I'm glad I did tell and he can't get the old ranch. Just that much more hard work and another hired man to humor. I'll tell anything I please. I'm no child to be told to sit down in a corner and keep quiet." And with this resolution Grace began to slam dishes into the pan as a means of working off the storm.

Dinner found John still silent and moody, still chewing the cud of his wrath and disappointment. Grace made one or two attempts at conversation but not being met half-way, loftily tossed her head and pretended to be absorbed in pleasing thoughts. John needn't think he could lord it over her that way. She could be just as independent as he was. Suppose he didn't like her telling. He might have been

But when the purchase of the tractor was followed by the building of new cement walks and a watering trough at the barn, her amusement turned to into dismay. If John had so much money to spend, why didn't she know about it? She had always known before when things were to be bought or improvements to be made. There were no end of things she wanted, if money was so plentiful. Surely John could not have been serious when he made that silly threat to keep things to himself?

If he were not serious, John proved that at least he meant to give the plan a thorough trial. The finishing touch came when he walked in one day and tossed a legal document into Grace's lap. She took it up wonderingly and found it to be the deed for the Baxter farm.

"Why didn't you tell me you were going to buy this?" she demanded. "I think when it's a question of more work and a big outlay of money I might at least be consulted."

"I didn't tell you because I wanted to get it at as low a figure as possible," John replied. "I told you some months ago I'd like to get it, and woke up next morning to find everybody knew I was going to try to buy it. Next time I drove by there the old man ambled out and told me his 'figger' was \$125 an acre. I told him he could probably get

it if he waited for someone who didn't know how it was run down, and drove on. Last week he offered it to me for \$100 an acre cash, and finally agreed to take a \$1,000 payment and a land contract for the balance. By keeping my mouth shut I got what I wanted."

"But I wouldn't have told if I had thought it was anything important," Grace said. "I never tell anything I know matters."

"Everything personal is important between man and wife," John came back. "Neither one has any business to tell things they talk over at home. They don't know how the next one is going to twist things, nor how the story is going to sound when the neighborhood gets through with it."

"Well, you needn't have jumped on me the way you did," Grace protested. "A body would have thought I had committed the unpardonable sin. Lots of wives tell more important things and their husbands don't row them."

"No, nor they never trust them again," John said. "They just shut up like clams, and their wives never know what's the matter nor why they never talk things over any more. I could have done that and been a gentleman, but I thought I'd rather let you know where I stood. Then if you understood, we could keep on as partners. If you didn't want to reform, I would still have a chance of keeping still in the future."

"Yes, but you did both," Grace objected. "You made a terrible fuss about it and then you never told me anything any more either."

"Well, you acted as though you were perfectly right, and didn't care a mite what I wanted, so I thought I'd be just as independent as you were," said John. "Now we've both acted like a couple of children, let's be good and start over again. I'm just busting for someone to talk to."

"I'll sure be glad to know when there is any money to spend," Grace conceded. "I know a dozen ways to spend a ten dollar bill right now. And honest, I didn't tell Min you were going to buy the old farm. I just said you'd like to own it. I might have known, though, she'd jump at a chance to gossip."

"Well, it's over now and we've got the farm," said John. "So let's forget it. How about a bite to eat to bind this new agreement?"

"After violent emotion, most people and all boys demand food," quoted Grace. "The person who said that must have known you. There's a half a lemon pie—" but John was already in the pantry.

DEBORAH.

UNIQUE CENTERPIECE IN LOOP STITCH EMBROIDERY.

BY MAE Y. MAHAFFY.

For embroidering designs made up of clover blossoms there seems to be no stitch quite so appropriate as the one known as loop stitch, a combination of heavy padding and the familiar lazy daisy or bird's eye stitch. The illustration shows an unusually attractive and unique centerpiece, fifteen inches across, which is well adapted to this form of embroidery.

The edge of the piece should, of course, be padded in the ordinary manner and buttonholed closely. If the pattern is carried out on a tan or gray linen it will look well to have this work done in a light shade of green, one which blends with the greens used for the foliage. On white linen the edge may be in white.

The stems are done in the darkest shade of green employed, and it is wise to use at least three shades of green in all, two in the leaves and one in the stems, changing so that some leaves are darker than others. The leaves may be worked in the long and short stitch illustrated in the small diagram, or be outlined and filled in with seed stitch, the common back stitch of the seamstress. Another pleasing method of working leaves of

this character is to embroider each leaf in two parts, the stitches slanting upward and outward in opposite direction from the center, thus leaving a ridge in the center.

To make the blossoms in the loop stitch, first pad the central portion of the blossom for about half an inch across. Four shades of floss will be needed for the blossoms, and the medium or dark shade will be best for the padding. Pad crosswise, then again lengthwise, and then crosswise, less heavily on the outer edges. Be sure that the last row of padding lies crosswise of the blossom so that the loop stitches will not sink down between. The outer row of loops will be practically outside the padding, and should be of the lightest shade of floss. The next row is a shade larger, and so on toward the center, the darkest shade being used here. Since the center only is padded, the blossoms round up nicely, giving them a natural and graceful contour not possible to work on one level. The loops are shown also in the small cut, but without the padding stitches beneath. Each loop represents one petal of the flower, and each loop is held down at the tip by a tiny stitch, which must not be drawn into the padding too tightly. A rather heavy floss should be used.

HOME QUERIES.

Household Editor.—Can someone tell me how to make a crack filler for a kitchen floor? Also how to remove paper from a ceiling?—Mrs. H. C. W.

Household Editor.—Will someone be so kind as to tell me how to dye a pink plume black?—F. E. H.

I do not think you could do it satisfactorily at home. Better take it to a professional dyer.

M. E. F. Perry.—We have used so many recipes recently for preserving and pickling meats that I am holding yours for later use. I thank you for sending them. Col. Cody died January 11, 1917. His body was placed in a vault in a cemetery in Denver and on Decoration Day it will be removed to the summit of Lookout Mountain, at Golden, Colorado.

H. B. W., Port Austin.—I do not think you can use the olive oil for salads. There is an old saying that "olive oil is old at the end of the year." Write to the Department of Agriculture at Washington, D. C., as to whether it could be used for soap.

CORN MEAL BREAD.

Two methods for wheat-and-corn bread have been formulated and tested by H. L. Wessling, assistant chemist in the Bureau of Chemistry, United States Department of Agriculture. They follow:

Wheat and Corn Bread, Enough for Four Loaves.

Two and a quarter pounds, or two and a half scant quarts of sifted bread flour; three-fourths pound, or two and two-thirds cupfuls of corn meal; two cakes of compressed yeast; three level tablespoonfuls of sugar; one and one-quarter level tablespoonfuls of salt; about one quart of liquid (water, milk or equal parts of milk and water), three level tablespoonfuls of shortening if desired.

If milk is used it should be scalded and then cooled until lukewarm. Less yeast may be used, but more time for rising will then be required.

Make a sponge with two pounds of white flour, the yeast, salt, sugar and the lukewarm liquid. Cover and set in a moderately warm place to rise, where it will be free from drafts and where the temperature will be between eighty and eighty-eight degrees F. When the sponge has become very light, which should occur within two hours, beat it up thoroughly, add the softened shortening, if this is to be used, and gradually work in the remainder of the wheat flour which has been sifted with the corn meal. Knead the mixture un-

til a smooth and elastic dough has been formed which is fairly soft, but not sticky. If the dough is too stiff or too soft, add a little more water or flour as required, kneading well after each addition. Cover and set back to rise again until double in volume, which will require from one to two hours. Knead lightly, divide into three or four approximately small portions, reserving a small ball of dough for an "indicator." Place this ball of dough in a small jelly-glass having straight sides, which has been slightly warmed. Note the volume of dough in the tumbler and mark the glass at twice this volume.

Mold the loaves and place in slightly warmed and greased pans. Place these, together with the glass containing the "indicator," in the same warm place and let rise until the "indicator" shows that it has just doubled in volume. Then place the loaves in the oven, which should be at a good steady heat and bake forty-five to fifty minutes.

Wheat and Corn Bread No. 2.

Same proportions as for No. 1, except the liquid.

Put two and two-thirds cupfuls of corn meal into a double boiler or a vessel which can be placed over another one containing boiling water. Add to the meal three and one-half cupfuls of cold water; mix thoroughly and bring to the boiling point, stirring frequently. Allow the meal to steam for at least ten minutes, then cool it until lukewarm. To this scalded and cooled meal add the salt, sugar, one cupful of flour and the yeast rubbed smooth and mixed with two cupfuls of lukewarm water. Mix thoroughly, cover and set in a moderately warm place to rise, as directed in method No. 1. When this batter has become very light, which will require about two hours, beat it thoroughly, add the softened shortening, if it is to be used, and the remainder of the white flour. Knead thoroughly until it is smooth and elastic. Cover and set back in its warm place to rise until double in bulk. Then mold into loaves and finish as directed under method No. 1.



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GRAINS AND SEEDS.

April 24, 1917.

Wheat.—New high price records were established again last week when No. 2 red reached \$2.70 on the local market. Prices fluctuated within a wide range with a strong tone prevailing at the close of Monday's session. Although a great deal of damage has been done the growing crop, rains this past week have materially improved the outlook over a wide area of the winter wheat belt, and greatly helped the farmers in the spring wheat section where the acreage to be sown will be greatly in excess of other years. The wild buying of flour following the announcement of war between this country and Germany has abated to a considerable extent and this has weakened the position of the bulls in the trade. Foreign demand remains steady. Primary receipts are about the same as for the corresponding period a year ago. The price for No. 2 red wheat on this date in 1916 was \$1.17 per bushel. Last week's Detroit quotations were:

	No. 2 Red.	No. 1 White.	July
Wednesday	2.57	2.54	2.02
Thursday	2.70	2.67	2.10
Friday	2.65	2.62	2.06
Saturday	2.60	2.57	2.04
Monday	2.61	2.58	2.03 1/2
Tuesday	2.69	2.66	2.11

Chicago.—May wheat \$2.40 1/4; July \$2.06 1/2; Sept. \$1.82 1/4.

Corn.—Corn values made new records again last week with the trade continuing in a very firm position, although the volume of sales was not as large as during periods when supplies were more plentiful. The visible supply decreased 1,053,000 bushels last week. In the Ohio valley and to the west where planting is in progress conditions are favorable and acreage will be large. One year ago No. 3 corn was quoted at 75c per bushel. Last week's quotations were:

	No. 3 Mixed.	No. 3 Yellow.
Wednesday	1.50	1.52
Thursday	1.53	1.55
Friday	1.53	1.55
Saturday	1.51	1.53
Monday	1.51	1.53
Tuesday	1.55	1.57

Chicago.—May corn \$1.44 per bush; el; July \$1.39 1/2; Sept. \$1.39 1/2.

Oats.—The advance in oats was comparatively small and the trade continues quiet and easy. The visible supply decreased 1,651,000 bushels last week. Seeding is progressing under favorable conditions in most of the heavy oat growing districts. A year ago standard oats sold here at 46 1/2c per bushel. Last week's local quotations were:

	Standard.	No. 3 White.
Wednesday	78	77 1/2
Thursday	78	77 1/2
Friday	77	76
Saturday	77	76
Monday	76 1/2	76
Tuesday	77	76 1/2

Chicago.—May oats 66 1/2c; July 63 1/2c per bushel; Sept. 55c.

Rye.—This cereal shows an advance of 15c during the week, with No. 2 now quoted at \$2 per bushel.

Peas.—Trade is firm with field varieties selling at \$2.75@3.75, sacks included, in Chicago.

Beans.—Price has advanced \$1.05 and now selling at \$9.75 for cash and April shipment, the highest prices ever recorded here. There is an active demand and scarcely no offerings. On the Chicago market demand is urgent and offerings limited with prices ascending to \$9.75@10 for the Michigan hand-picked pea beans. Red kidneys are held there at \$8. At Greenville an \$8.90 basis prevails at the elevators.

Seeds.—Prime red clover \$10.65 per bushel; October \$10.45; alsike \$11.50; timothy \$3.35.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$12.90; seconds \$12.50; straight \$12.30; spring patent \$12.90; rye flour \$10.10 per bbl.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$55; standard middlings \$44; fine middlings \$45; cracked corn \$61; coarse corn meal \$60; corn and oat chop \$55 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$15.50@16; standard timothy \$14.50@15; No. 2 timothy \$13.50@14; light mixed \$14.50@15; No. 1 mixed \$13.50@14; No. 1 clover \$13@13.50. Pittsburgh.—No. 1 timothy \$17@

17.50; No. 2 timothy \$15.50@16.50; No. 1 light mixed \$15.50@16.50; No. 1 clover, mixed \$16.75@17.25; No. 1 clover \$17@17.50.

Straw.—In carlots, on track Detroit, rye straw \$10.50@11; wheat straw \$9.50@10.

DAIRY AND POULTRY PRODUCTS.

Butter.—The butter and egg board has prohibited trading in futures. All deals must be for delivery in 24 hours. Market is steady at a decline of 2c. Creamery extras 43c; do firsts 42c; dairy 33c; packing stock 30c.

Elgin.—Increased receipts cause a weakening of the market and lower prices. The price, based on sales, is 44c, which is 2c lower than last week.

Chicago.—Business continues on restricted scale, and market is favoring buyers. Prices are 3c lower than last week. Extra creameries 43c; extra firsts 42c; packing stock 32c.

Poultry.—Market is easier and prices are lower. The demand is active. No. 1 hens 24@25c; No. 2 do 22@23c; small do 22c; ducks 23@24c; geese 19@21c; turkeys 25@26c.

Chicago.—The market continues steady at unchanged prices. Demand is moderate. Fowls 22 1/2c; roosters 16 1/2c; broilers, 1 1/2@1 3/4 lbs, \$8@12 per dozen; ducks 17@23c; geese 13@15c; turkeys 12@20c.

Eggs.—Market continues firm with prices 1/2c higher. Fresh firsts 35c; current receipts 34 1/2c.

Chicago.—This market is easier but prices have not changed much. The receipts are increasing some. High prices are curtailing consumption. Fresh firsts 33 1/4@34 1/4c; ordinary firsts 31 1/2@32 1/2c; miscellaneous lots, cases included 32@34c.

Dressed Calves.—Market at Detroit is easier. Fancy 16@17c; No. 2, 14@15c per lb.

Chicago.—Trade is light, receipts being small; 50@60-lbs. weight 13@14c; 60@80-lb. weight 14@14 1/2c; 90@100 lbs. 14 1/2@16c; extra fancy 17.

FRUITS AND VEGETABLES.

Apples.—Market firm with prices unchanged. Baldwin \$5@6; Spy \$5@7; Steele's Red \$8 per bbl. At Chicago the demand is good for well graded stock, otherwise the demand is only fair. No. 1 stock sells at \$3.50@6.50 per bbl; No. 2 at \$2.25@2.75; orchard run \$3.25@3.50.

Potatoes.—On account of light receipts prices are higher and market is firm. Offerings are small. In carlots, at Detroit in sacks, Michigan \$3@3.10 per bushel. At Chicago no Michigan stock was reported. Market is slightly lower and easier. Prices range from \$2.75@3.10 per bushel. At Greenville potatoes are selling at \$2.95 per bushel.

WOOL.

The government has declined the offer of the wool trade to allow agents of the War Department to select such grades and quantities as may be desired to fill war orders, with the result that the exchanges were opened again last week when prices immediately advanced to new high levels. There have been many inquiries for fleeces, and but few sales reported on account of the rapidly depleted supplies. Purchases are beginning to be made in this state, with prices ruling around 50c for fine and medium grades. However, some of the producers are holding in expectation of higher values. Michigan unwashed delaines are quoted in Boston at 53c; do combing 48@56c; do clothing 44@46c.

GRAND RAPIDS.

Potatoes held at \$3@3.20 in this market while the quotations at loading stations outside are around \$2.80. White beans are quoted at \$8@9 here, Charlotte and Otsego markets quote at \$8.75, Stanton at \$8.50. Wheat starts off this week at an even \$2.50, but with market unsettled and prices tending to go higher. Oats have advanced to 80c; corn \$1.60; barley \$1.50; rye \$1.50. In the meat line live fowls are quoted at 20@22c; hogs 15@17 1/2c; mutton 17@18c; lambs 19@20c; calves 15@16 1/2c. Eggs are worth 32@33c.

DETROIT EASTERN MARKET.

There was a fairly active market on Tuesday morning, with prices holding firm to higher. Eggs 38c; pork 21c; apples \$1@2 with Ben Davis the chief variety offered at \$1@1.35; potatoes \$3@3.50; no loose hay in sight.

LIVE STOCK MARKETS.

April 23, 1917.

Buffalo.

Receipts here today as follows: Cattle 175 cars; hogs 50 d. d.; sheep 65 d. d.; calves 2200 head.

With 175 cars of cattle here today the demand for shipping grades from the east was very light and we had the worst trade of the season, practically nothing done until afternoon. The bulk of the shipping cattle and medium weight steers sold 50@75c lower, but the low priced common kinds from 950 lbs. down were only 25c lower. Cows from 650 lbs. down sold fully steady, but the better grades of cows and heifers were fully 25c lower. There were only a few stockers and feeders here and there was a good outside demand for them at steady prices. The bulk of the bulls sold 15@25c lower.

Moderate supply of hogs and a rather light demand forced prices 10@15c below Saturday's best time, bulk selling at \$16, three fancy loads of heavies at \$16.35, a bunch of the same lot sell on Saturday's market at \$16.50. Pigs and lights \$14@14.50, as to weight and quality; roughs \$14@14.25; stags \$12@13. About everything sold that arrived in time for market and looks like a fairly good trade on anything decent, but with so many light weights coming cannot look for much improvement on this kind.

With a heavy run of lambs today our market opened very slow and prices 50c lower than the close of last week. About 10 loads unsold and we look for steady to shade higher prices last of the week, depending chiefly on the receipts.

We quote: Wool lambs \$15.50@15.75 per cwt; clipped lambs \$12.60@12.75; clipped heavy lambs \$11.25@11.50; cull to common \$10@11.50; yearlings \$11@11.50; clipped wethers \$11@11.25; do ewes \$10@10.50; do bucks \$8@9.50; best calves \$12@12.25; common and light \$9@11; heavy \$8.50@11; grassers \$6@6.50.

Chicago.

April 23, 1917.

Cattle. Hogs. Sheep. Receipts today..18,000 45,000 16,000 Same day 1916..14,736 33,487 17,753 Last week.....48,345 115,218 81,466 Same wk 1916..41,981 151,184 71,116

Buyers were late in taking hold of cattle this morning, and while butcher stock and choice steers were firm, it was generally assumed that other kinds of steers would sell more or less lower. Hogs were on an average about 15c lower, with sales at \$14.25@15.85. Hogs received last week averaged in weight 217 lbs. Sheep and lambs of desirable quality went at firm prices, with prime wethers bringing \$13.

Cattle were in much smaller general demand last week than usual, and the sellers were forced to submit to big breaks in prices for most kinds, with the few strictly prime beefs selling early at a further small advance. The top price, \$13.50, was a record-breaker, but even the good and choice beefs sold off sharply later, along with other descriptions, the bulk of the steers received during the week finding buyers at a range of \$10.25@12.75, choice to fancy long-fed heavy steers going at \$12.75@13.50, while a class of steers grading as good found buyers at \$12@12.70. Steers of a medium grade had an outlet at \$11@11.95, and a fair kind of steers of light weight brought \$10 and over, while sales took place of inferior little steers down to \$8.75@9.75 and an occasional sale at an even lower price. Yearlings were salable at \$11@12.40 for desirable offerings, with very few strictly choice lots offered. Butchering cattle were wanted at \$7.80@11.25 for cows and at \$7.50@11.75 for heifers, while cutters went at \$7.15@7.75, canners at \$5.75@7.10 and bulls at \$6.50@10.15. Calves were in rather animated demand most of the time, with sales at the week's highest time at \$6.50@13.50, light vealers going at \$11 and over. There was only a moderate amount of business accomplished in stockers and feeders, moderate offerings and high prices discouraging buyers. Stockers sold at \$7.10@9.75 and feeders at \$8.60@10.25. Many stockmen carrying cattle have been shipping their holdings earlier than was at first intended, as they are afraid that later prices may be placed on a lower scale, and the market has been glutted with immature offerings. Pretty much everything in the cattle line has gone off materially in values, and stockmen have expressed surprise over the way the market acted. It seems to be the prevailing opinion that cattlemen will continue their practice of marketing their holdings except following bad breaks in prices. The close of the week saw a boom in canners and cutters, while other cattle were 25@40c lower than a week earlier.

Hogs suffered severe declines in prices during the last week, following the boom of the preceding week which landed prime heavy shipping barrows at \$16.50 per 100 lbs., the highest price ever recorded. It was not a case of too generous offerings, as the receipts continued on a far smaller scale than a year ago; but rather an instance where all classes of local buyers and

eastern shippers decided that the market had been advancing at too lively a pace to last. Owners of hogs are slow in putting on more weight on their shipments to market, and recent receipts averaged only 212 lbs., comparing with 211 lbs. a week earlier, 218 lbs. one year ago, 231 lbs. two years ago and 232 lbs. three years ago. The eastern shipping demand for hogs has been checked by the high prices, and it is not unlikely that the consumption of fresh and cured hog meats will be curtailed because of their dearthness, although thus far the demand is very large, with exports of bacon and lard comparing favorably with those made a year ago. The best prices are paid for prime heavy barrows adapted for eastern packing requirements, and prime light shipping hogs sell about 20c below them. The failure of owners to make their hogs heavier is explained by the dearthness of corn. At the week's close light bacon hogs brought \$14.40@15.55, heavy packers \$15.30@15.80, light shippers \$15.60@15.90, heavy shippers \$15.80@16 and pigs \$10.50@13.65. Pigs closed about \$1 lower than a week earlier. A week earlier hogs brought \$15.25@16.35.

Lambs, sheep and yearlings are high sellers all the time, even if at times prices weaken, as was the case part of last week. At the best time of the week prime fat woolled and clipped lambs sold at the highest prices on record, and extremely high prices were paid for prime yearlings and wethers, while western feeding and shearing lambs sold higher than ever, with a good demand. The receipts included a much larger proportion of clipped flocks than heretofore, and few sheep or yearlings arrived. Closing prices for woolled lots were: Lambs \$13@16; fat heavy lambs \$14.50@15.60; feeding and shearing lambs \$14@15.40; yearlings, \$12.50@14.35; wethers \$11.75@13; ewes \$7.50@13; bucks \$10@11.25. Shorn lambs brought \$11.50@13 and spring lambs \$14@18. Shorn wethers brought \$10@11.25.

Horses were in moderate supply and in good demand last week at firm prices, with army horses going readily at \$120 for mounts and \$150@160 for gunners. On Monday eastern shippers bought more than 900 horses. A good demand existed for drafters at \$185@285, while good chunks weighing 1250 to 1500 lbs. were wanted at \$125@175. Common to fair horses were quoted at \$60@100.

MICHIGAN GROWERS ORGANIZE.

The Michigan Growers' & Shippers' Association is the title of an association formed at Muskegon, with the following officers: President, Arthur DeBaker, Norton; vice-president, Stanley Worthing, Spring Lake; secretary-treasurer, Frank Hile, Norton; business agent, W. J. Moorman, Muskegon; directors, the officers and Harry Ross, Fruitport; Egbert Poster, Spring Lake; Laurence Tyler, Norton; Klaas Bolen, Spring Lake. The membership fee of \$1 is returned to members out of the profits at the end of the season. Business will be done with a limited number of commission houses and the members will receive the stamps of these houses to be used on their packing cases. W. J. Moorman will represent the association in Chicago. The three per cent ordinarily paid to the local solicitors of commission houses will go to the association treasury instead and out of this the operating expenses will be paid and the balance will make up a fund from which a dividend will be paid at the end of the season pro rata on the amount of produce shipped by each member. Returns for each shipment will be made direct to shippers the same as though they were acting independently after each consignment.

Kent Co. ALMOND GRIFFEN.

CROP AND MARKET NOTES.

Emmet Co., April 23.—Snow is just gone. Cool and rainy. Only under the most favorable drainage conditions has it been possible to plow or work the ground. Buyers are picking up everything available in the way of beef cattle. Pretty good demand for farm work horses, heavier grades preferred. Prices range from \$100@250. The crop of spring pigs is very light. Milch cows are high. Beef 10@13c; pork 12@16c; fowls, live 20c. Winter grain and seedings in good condition.

St. Clair Co., April 21.—Fall grains are improving. New seeding and meadows not very promising as yet. Oat sowing delayed because of the recent rains. Ground worked up good before the rains but too wet for planting. Some potatoes planted. Oats and corn very scarce. Fruit trees are generally neglected; not much spraying done. Potatoes \$2.50; beans \$8; wheat \$2.50; corn \$1.50; butter-fat 42c; cattle \$5@10 per cwt; hogs \$11@14, live weight.

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With one hand stroke the hair the wrong way, with the other sift in Dr. Hess Instant Louse Killer. Rub well into the skin. Try it and see how easily you can rid your horses, cattle and calves of lice. You'll find

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an excellent thing in the poultry yard. Sprinkle freely in nests, on roosts, about pens, yards, houses, run-ways. Don't fail to put it into the dust bath. That's the easy way. Fowls and chicks will work it all through their feathers—no guilty louse escapes. It comes in handy sifting-top cans.

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USE YOUR OWN ENGINE. Saves the cost of extra power. Nothing automatic to cause trouble. Needs only one simple adjustment to the speed of your engine. A woman or child can operate it.

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\$10 REWARD! For return of short-haired and slender, brownish gray with black stripes, strayed or stolen short time ago from vicinity of Myrtle and Grand River Ave., Detroit. Write or call Mrs. Leon Nemrik, 25 E. Willis, Detroit. Phone Grand 4326-M

Farm Hands Furnished Free of charge, provided fare is paid from Detroit. State wages. Rudolph Employment Agency, 141 Third St., Detroit, or Phone Main 42.

WANTED TO BUY 50 to 100 GALLONS OF MILK PER DAY. Will contract by the year and pay a good price. **ROY'S CREAMERY, 1018 Wabash Ave., Detroit, Mich.**

THIS IS THE LAST EDITION.

The first edition is sent to those who have not expressed a desire for the latest markets. The late market edition will be sent on request at any time.

DETROIT LIVE STOCK MARKET.

Thursday's Market.
April 26, 1917.

Cattle.

Receipts 1920. Receipts in all departments at the local stock yards this week were considerably below those of a week ago and according to drovers from all parts of the state they will be light from now on, as stock in the country fit for market is getting very scarce.

In the cattle division this week the general market held about steady with that of a week ago, but good prime grades were dull; at present there seems to be a strong demand for canner cows, presumably for canned meats for war purposes. Most any kind of a canner would bring \$6 per cwt. and from that to \$6.50. Good milch cows were scarce and those here brought good strong prices. The close in this department was steady with the close a week ago. Prices averaged as follows. Best heavy steers \$10.50@11.25; best handy weight butcher steers \$9.50@10; mixed steers and heifers \$8.50@9; handy light butchers \$8.25@8.50; light butchers \$7.75@8.25; best cows \$8.50@9; butcher cows \$7.50@8.25; common cows \$6.75@7.25; canners \$6@6.50; best heavy bulls \$9@9.25; bologna bulls \$8@8.50; milkers and springers \$5@9.00.

Bishop, B. & H. sold Thompson 19 steers av 960 at \$10.25, 9 do av 828 at \$9.25, 1 do wgh 830 at \$7, 7 cows av 820 at \$6.50, 1 do wgh 720 at \$7; to Mason B. Co. 1 bull wgh 1410 at \$8.50; to Sullivan P. Co. 18 steers av 1025 at \$10; to Mason B. Co. 2 bulls av 1645 at \$9, 1 do wgh 1180 at \$8; to Parker, W. & Co. 4 cows av 1000 at \$7.50; to Bray 2 do av 830 at \$6.50, 2 do av 1245 at \$8; to Thompson 1 bull wgh 1060 at \$7.75; to Sullivan P. Co. 1 do wgh 1950 at \$8.50, 9 cows av 1000 at \$8, 1 steer wgh 1310 at \$10.50, 2 cows av 1050 at \$7, 2 do av 855 at \$8, 1 do wgh 1080 at \$8.50; to Bray 1 do wgh 820 at \$6, 1 do wgh 770 at \$6.50, 3 do av 880 at \$6.25, 2 stockers av 630 at \$8; to Bresnahan 7 cows av 824 at \$6.75; to Sullivan P. Co. 14 steers av 962 at \$10.50, 12 do av 1192 at \$10.50, 2 do av 965 at \$10, 2 cows av 980 at \$8.50, 4 do av 767 at \$6.50, 10 do av 1035 at \$7.50, 4 steers av 800 at \$9.25, 8 do av 784 at \$9, 13 do av 917 at \$10, 29 do av 867 at \$9.50, 1 bull wgh 1120 at \$8.50; to Parker, W. & Co. 12 butchers av 646 at \$8.50, 2 steers av 1065 at \$10.25, 5 do av 824 at \$9, 1 bull wgh 1320 at \$9, 3 cows av 1017 at \$8.

McMullen, K. & J. sold Hammond, S. & Co. 1 bull wgh 1600 at \$8.50; to Sullivan P. Co. 6 cows av 1040 at \$7.65.

Veal Calves.

Receipts 1101. The veal calf trade opened early in the week at steady last week's prices, but early Wednesday dropped 50c and at the close on Thursday good grades brought \$11.50@11.80; common and medium \$9@10.50; heavy \$7@8.

Erwin, S. & J. sold Parker, W. & Co. 4 av 145 at \$10; to Mich. B. Co. 27 av 140 at \$11.50; to Thompson 8 av 135 at \$11.50, 7 av 145 at \$11.75; to Rattkowsky 11 av 145 at \$11.

McMullen, K. & J. sold Burnstine 1 wgh 190 at \$12.50; to Sullivan P. Co. 5 av 100 at \$9, 17 av 130 at \$12; to Goose 4 av 125 at \$12, 3 av 110 at \$9; to Nagle P. Co. 21 av 140 at \$11.60.

Sheep and Lambs.

Bishop, B. & H. sold Mich. B. Co. 38 spring lambs av 65 at \$18; to Sullivan P. Co. 9 sheep av 100 at \$9, 20 lambs av 50 at \$10, 166 do av 75 at \$12, 21 do av 75 at \$12.25, 90 do av 75 at \$12.25, 141 do av 75 at \$12.60, 74 do av 80 at \$11.75.

Receipts 1216. The sheep and lamb trade was active and on Wednesday were 25c higher than early opening, and on Thursday took another advance of a quarter and were 50c higher for the week, selling as follows: Best lambs \$12.50@12.75; fair lambs \$11.25@12; light to common lambs \$9.50@10.50; fair to good sheep \$9@10; culls and common \$6.50@8.

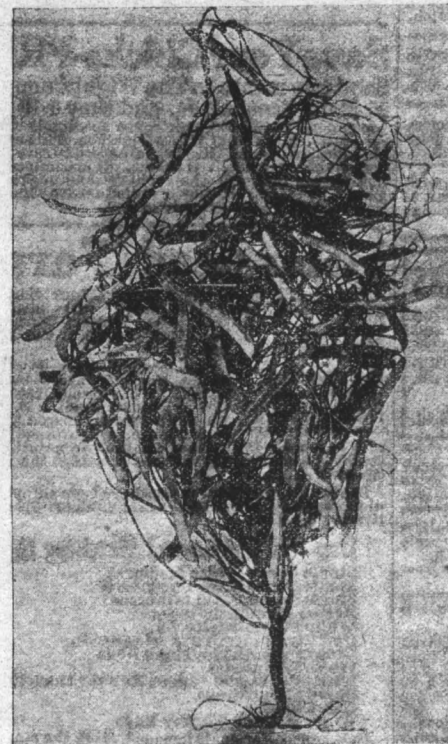
Sandel, S. B. & G. sold Newton B. Co. 86 lambs av 75 at \$12, 13 do av 75 at \$12; to Thompson 30 do av 77 at \$12, 14 do av 75 at \$12; to Parker, W. & Co. 83 do av 75 at \$12; to Sullivan P. Co. 26 do av 65 at \$10.50, 14 sheep av 90 at \$8.50.

Hogs.

Receipts 5864. The hog trade was dull and few were sold on Wednesday when big packers' highest bid was \$15.35; on Thursday none were sold until very late. Prospects look for the good mixed grades \$15@15.50 and pigs \$12@13.25.

IMPROVED PEA BEANS

Absolutely Free from Anthracnose or Blight



Requires only 40 lbs. of seed per acre and are more prolific than common pea beans.

They ripen very uniformly and can be harvested earlier on this account.

We have less than five hundred bushels of seed left and can fill orders only as long as stock lasts.

All our germinating tests of these high grade beans show 100%.

Price Per Pound 20c
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New 16 oz. Grain Bags Extra at 30c Each

Put Up in Sealed Bag Containing Two Bushels.

For further information we refer you to the Agricultural College, East Lansing, Michigan, who have already endorsed this bean very highly. If you intend to plant White beans why not plant the best seed?

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I am selling my entire herd, consisting of 50 head, all females excepting my herd bull, the young bulls having been sold. There are 16 registered and 34 high class grades. Farm is situated 6 1/2 miles south of Bellevue and 7 1/2 miles north of Marshall. Write for catalogs.

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EGGS, ETC.—Small consignments from producers in your territory bring very attractive prices. Returns day of arrival. Refer to Dun or Bradstreet. Zenith Butter & Egg Co., 170 Duane St., New York, N.Y.

Hay & Straw Can you ship us any No. 3 hay direct to Boston, Mass? Have you any straw? **Wm. S. Sawin & Co., Roxbury, Mass.**

Binder Twine—Granges, Farmer Clubs get our prices. Farmer agents wanted. Sample and circular free. **Theo. Burt & Sons, Melrose, Ohio.**

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One Iron Gray Percheron Stallion, registered, 3 years old. One pair of Spanish Mules age 6 and 8, weight 2100. One Spanish Jack. Two Holstein bulls registered, mostly white, sired by a 33-lb. bull; one is 2 1/2 yrs., one is 4 mos. a dandy. **Milford F. O., Highland Phone and R. station. D. E. Dean, Milford, Mich.**

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Mostly yearlings with lambs by side, extra good ones, come at once if you want them.

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OXFORD DOWN SHEEP We have a few rams for sale. **M. F. Gansley, Lennon, Mich.**

Mention the Michigan Farmer when writing Advertisers

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Anconas Good stock; fine layers. 30 eggs, \$2.50; 100, \$5. Order now. T. Z. RICHY, CANNELTON, INDIANA

Baby Chicks and Hatching Eggs From Bred-to-Lay Barred Rocks, S. C. White Leghorns and S. C. Buff Orpingtons. All high class stock at very reasonable prices. Send for our Chick Folder at once. RUSSELL POULTRY RANCH, Petersburg, Mich.

BABY CHICKS AND EGGS White, Brown, Black Leghorns. Barred Rocks, R. I. Reds. Bred for high egg production. Circular free. Book orders early. Sunnybrook Poultry Farms, Hillsdale, Mich.

Baby Chicks Cheaper than hatching eggs. We specialize in Leghorns, Rocks and Reds. Send for catalogue. Twentieth Century Hatchery Company, Box 162, New Washington, Ohio.

CHICKS Rocks, Reds, Orpingtons, Wyandottes, Leghorns, Best laying strains. Ship everywhere. Prices right. TIFFIN POULTRY FARMS & HATCHERY, Dept. 16, TIFFIN, OHIO.

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BABY CHICKS S. C. White Leghorn. Ferris 200 to 230 egg strain, large healthy farm raised birds. Prices reasonable. Cir. free. Herb't Hammond, Williamston, Mich.

JOHN'S big beautiful hen-hatched Barred Rocks, good layers. Breeding pens (5 birds) \$10 to \$20. Eggs 30, \$2.50; 100, \$7. Circulars. Photo. John Northon, Clare, Mich.

Barred Rocks: EGGS FROM STRAIN with records to 297 eggs a year, \$2 per 15. Delivered by parcel post, prepaid. Circular free. Fred Astling, Constantine, Mich.

**FERRIS WHITE LEGHORNS**

Great layers. Pullets, hens, breeding males; eggs for hatching; day old chicks; from hens laying 200 to 264 eggs. Prices low, quality guaranteed. Free catalog and price list explains all. Write for it. Geo. B. Ferris, 934 Union, Grand Rapids, Mich.

Barred Plymouth Rock Eggs from full blood stock \$1.50 per 15. Prize winning strain. J. A. Barnum, Union City, Mich.

Barred Rock Eggs Layed 950 Eggs in one year. W. C. Coffman, R. S. Benton Harbor, Michigan.

"200-Egg" Pedigree White Leghorns

Baby Chicks, Eggs for Hatching "Bred-to-lay" strain, vigorous, healthy stock, all sired by Missouri Experiment Station males with pedigrees of 200 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, \$16.50 each, capacity 800 to 500 chicks. Catalogue. Michigan Poultry Farm, Lansing, Mich. "Michigan's Largest Poultry Farm."

LAYBILT S. C. W. LEGHORNS

Large, Great Layers, Pure White

Proved egg type from like ancestry. Not the "Best in the World," but None Better for beauty and laying ability. Laybilt Leghorns mean either better quality at the same price or the same quality at a less price. Selected hatching eggs, \$1.50 per 15. Parcel Postpaid. \$5 per 100; 90% fertility guaranteed. Strong Day-Old Chicks, \$12 per 100. Guaranteed delivery alive and lively. Everfresh Egg Farm, Ionia, Mich.

S. C. White Leghorns

We have about 40 S. C. White Leghorn cock birds for sale. These males are from 200 egg strain and are offering them for \$3 each. Also about 200 fine April hatched pullets at a great bargain. Eggs for hatching March and April \$5 per 100. We will gladly give references on all our sales.

KRENTL BROS., Box 624, East Lansing, Mich.

CHICKS, are booking orders now for spring delivery, different varieties. Free booklet. Freeport Hatchery, Box 12, Freeport, Michigan

Baby Chicks pure bred Youngs S. C. W. Leghorns and P. B. Rocks, 8 cents and up. Catalogue free. M. Knolls Hatchery, Holland, Mich., R. 3

FOR SALE Pure bred White Plymouth Rock Eggs for hatching. OHAS. KLETZLEN, BATH, MICH.

FOR SALE Pure Bred R. C. B. Minorca eggs for hatching \$1.00 per 15. E. D. Van Natter, Standish, R. 3, Mich.

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"Lays and Lays Profitably"

Vigor, Egg Production, Longevity

1000 hens as breeders on free range.

Hatching Eggs \$1.50-15, \$7.00 per 100

Baby Chicks \$2.70-15, \$16.00 per 100

Fertilized eggs—full count and safe arrival of chicks guaranteed.

CAVANAGH POULTRY FARMS

Route 3, Lansing, Michigan, U. S. A.

"30 years Experience—Insures Quality."

BUFF LEGHORNS Pullets, Hens, Pens, Eggs. All very reasonable. Dr. William A. Smith, Petersburg, Mich.

For Sale Bred to lay S. C. W. Leghorn hens at \$2 each, bred from 200 to 260 egg stock; also eggs for hatching. Leon C. Wheeler, Barryton, Mich.

Fowler's Buff Rocks. I am now booking orders for eggs at \$1.50 for 15, \$3 for 30, \$4 for 50, \$7 for 100. Pen No. 1, \$4 for 15. Also one 2 yr. old White Holland Tom. R. B. Fowler, Hartford, Mich.

HATCHING EGGS from my S. C. W. Leghorns utility 15c per 15. If you want to raise some prize winners send \$3 for 15. White Line Poultry Farm, Hillsdale, Mich.

EGGS for setting from R. C. Brown Leg horns, leading strains in America. Also W. China Geese and M. Pekin ducks. MRS. CLAUDIA BETTS, Hillsdale, Michigan

Eggaday White Wyandottes, Eggs \$1.25 per 15; \$2.25 per 30; \$36.50 per 100. EGGADAY RANCH, Marshall, Mich.

Improve Your Poultry. My Young's Strain S. C. White makes, Strong, vigorous, bred-to-lay stock. Baby chicks \$8 to \$11 per 100. Satisfaction guaranteed. Large orders filled. Free catalogue. W. Van Appleborn, Holland, Mich., R. 7, Box 141.

AVICOL Stops chicks dying

A new scientific discovery that positively cures and prevents White Diarrhoea or Chick Cholera, Black-head, and other bowel diseases of poultry. Leading poultry breeders everywhere use and endorse Avicol. Easily used, in the drinking water. Bond-Guaranteed to do the work or money promptly refunded. Your poultry remedy dealer can supply you. If not, we will send you Avicol by mail prepaid. Price 25c and 50c. Don't accept a substitute. Burrell-Miller, Indianapolis, Ind. 113 Hoosier Block

\$8.55 World's Champion Buys Belle City Incubator

140-Egg Size—Hot Water—Double Walled—Self Regulated, with 54.85 Hot-water 140-chick Brooder—both \$12.50. Free Postage of Books. Satisfaction Guaranteed. \$1000 In Prizes. Conditions easy—Save time—Order Now. Write for Free Book, Hatching Facts today. A postal will do. Jim Rohan, Pres. Belle City Incubator Co., Box 14 Racine, Wis.

Save Your Chicks-FREE

Send two names to The Wight Company, 25 Main, Lamoni, Ia. and they will send you enough IOWITE Chick Tonic absolutely free to save forty chicks from White Diarrhea. This remarkable disease preventative is guaranteed to save ninety percent of every hatch of chicks. It has helped poultry raisers save their chicks and make more money. It is certainly worth while to write The Wight Co. for this wonderful chick saver.

Homestead Farms

Offers tested thoroughbred poultry; Stock that with natural and convenient care will give eggs thru the Winter; stock that has given eggs thru the Winter just passed.

Red Blood Our poultry stock is all free range, no yards (except breeding pens). In Winter our Hens are in Colony Houses holding 30, 50, 100, 140 and 150 fowls—housed as for convenience, as the average farmer will house his fowls, they are bred to natural farm conditions and will lay with the care that the farmer can give.

Thoroughbred During the past Winter eggs have been shipped regularly to Chicago families—farm products direct delivery. We offer:

Practical Poultry

Day-Old Chicks and Hatching Eggs

Single Comb White Leghorns

Single Comb Brown Leghorns

Single Comb Black Minorcas

Barred Plymouth Rocks

White Plymouth Rocks

Buff Plymouth Rocks (Limited).

Rose Comb Rhode Island Reds

White Wyandottes

White Pekin and Indian Runner Duck Eggs

Day-Old Ducklings

Geese Eggs

White Holland Turkey Eggs

Homestead Farms is demonstrating the moral and economic value of federated interests; it is making poultry a profitable farm stock to the farmers of its own immediate vicinity.

If you want Red Blood Practical Poultry that will give eggs in Winter as well as in Summer, buy our stock which is bred to conditions under which you can yourself conveniently keep poultry.

We quote you prices and give our own experience in our descriptive circular which we will mail to you. Will you send for it?

HOMESTEAD FARMS, Bloomingdale, Mich.

Lillie Farmstead Poultry

B. P. Rocks, R. I. Reds, White Leghorns. Eggs for hatching, 15 for \$1.00, 26 for \$1.50, 50 for \$2.50.

COLON C. LILLIE, Coopersville, Mich.

MORSE'S White Leghorns. State Cup winners. Bred for eggs for years. Now selling eggs, chicks and stock. Free catalog. Rufus Morse, Belding, Mich.

Pine Crest S. C. White Orpingtons cock- 5 and 3 per 15, utility \$8.00 per 100. MRS. WILLIS HOUGH, Pine Crest Farm, Royal Oak, Michigan.

RHODE ISLAND REDS and PLYMOUTH ROCKS Males 5 to 12 lbs. according to age \$2 to \$5; P. R. hens weight 5 to 10 lbs. eggs 15 for \$1.50; 100, \$6; 120, \$7.20. Mammoth Bronze Tom Turkeys, 8 to 8 lbs. according to age \$6 to \$25, 10 eggs \$4. A. E. Cramton, Vassar, Mich.

R. I. Red Chicks and Eggs. Both Combs. Dark Red. More Michigan farmers than any other strain Catalogue free. Interlakes Farm, Box 39, Lawrence, Mich.

RINGLETS' Barred Rocks. The famous show and laying strain Eggs \$2.00 for 15. Delivered by Parcel Post from selected matings. Plain View Stock Farm J. W. Saliard, Prop. Res. W. St. Claire St., Romeo, Mich

Rose Comb Rhode Island Reds, Rose and Single Combs. Eggs, \$1.50 per 15 after Feb. 15. Jennie Buell, Ann Arbor, R. 8., Mich.

R. and S. C. Reds. Eggs and Chicks. Pure bred stock. Also good Scotch Collie Pups. O. E. Hawley, Ludington, Mich.

RHODE I. Whites win in the egg laying contest. Best Eggs and meat for eggs. Eggs \$2 per 15, \$5 per 45. Baby chicks. H. H. Jump, Jackson, Michigan.

R. C. B. Leghorns. Kulp and Maplewood strains with show and laying qualities. Write for prices before ordering. Maplewood Farm, Dept. F. Navarre, Ohio

Bred-to-Lay S. C. W. Leghorns and Barred Rocks. Eggs, \$1 for 15, \$1.50 for 25, \$2.50 for 50. Alpine Poultry Farm, R. 2, Grand Rapids, Mich.

ROSE Comb Rhode Island Red. Eggs for hatching. Special dark cherry red mating \$1.50 and exhibition mating \$2 per 15 eggs. Ridgman Red Farm, Vassar, Mich. R. 4

S. C. W. Leghorn eggs from a 240 egg strain. \$2 per 15. Utility eggs, \$5 per 100. HILL-CREST POULTRY FARM, Ypsilanti, Michigan.

Single Comb Black Minorcas Great big sired by a 10 lb. cock bird. R. W. Mills, Saline, Mich.

S. C. White Leghorns 200 egg strain. Tom Barron hens. Baby chicks 15c each. Hatching eggs 5c each. C. W. Gordon, Fowlerville, Michigan.

S. C. White Leghorn baby chicks, \$10 per 100. All males in pens from trap-nested stock. J. L. Woodward, Cement City, Mich.

Plymouth Rock Hatching Eggs. Buff, Barred, Columbian, Partridge, Silver and White. Sheridan Poultry Yards, Sheridan, Mich.

SILVER, Golden, White Wyandottes. A few good Golden cockerels left. Eggs from farm flock. Whites \$1.50 per 15; others \$3 per 15, \$5 per 30. C. W. Browning, R. 2, Portland, Mich.

S. C. White Leghorns. Size, shape, vigor, egg production. Hatching eggs \$5, Baby Chicks \$11 per 100. 15 years in the business. A. O. Howard, Tecumseh, Mich.

Hatching and Rearing Guineas

By C. H. CHESLEY

THE guinea is an interesting bird, and it requires much less attention to successfully rear than turkeys, ducks or even chickens. In many parts of the country there seems to be a growing interest in raising this class of fowl. Markets are calling for guineas more insistently each year and particularly is this true where there are large hotels and high-class restaurants and cafes, as it is almost the only available substitute for wild game at the present time, therefore it is not strange that the demand is growing larger every season.

A few pairs of guineas on the farm should be a source of profit and even though they are not kept for profit, they are well worth much more than the cost of feeding, as sentinels to warn of approaching danger and as insect gatherers in the garden. We keep the white variety because this bird dresses off handsomer and seems to be rather tamer than the Pearl Guinea. A flock of White African birds is as beautiful as any poultry that is raised on the farm and if the caretaker will exercise a little discretion in searching out the nesting places, they are certainly no wilder than a turkey.

Hens Make Good Foster Mothers.

Our guineas begin to lay about the first of May and continue all summer. If the birds are allowed full liberty and the flock is of considerable size, with about an even division of the sexes, they will mate in pairs. One male is sufficient for five or six females, however, if there are no more in the flock. We leave the eggs in the nest, which is usually in some out of the way place, until a considerable number have accumulated, then carefully remove the most of them. If the bird is about ready to set, she will immediately commence laying again, when she notices that her eggs have disappeared. Our Rhode Island Red hens make ideal mothers for the young guineas. It requires from twenty-six to twenty-eight days to incubate the eggs. When the eggs have been under the hen about one week, a few chicken eggs are added. The chicks help to tame the young guineas and teach them the voice of their foster mother. The young birds are handled much as are young chicks. The main thing to be borne in mind is to keep them in a warm tight pen for a few days. At first they do not seem to recognize the hen's call, but they soon learn it and then they may be allowed to run free. Confinement does not work well with guineas at any stage of their growth and they should have free range. The first few weeks, however, it is best not to allow them to get out in the wet grass of early morning. June and July are the months we do our hatching.

Feed the Same as Chicks.

Guineas will follow their foster mother about even when they are fully grown. As our birds live in the pens with the hens during the winter, we have often noticed that the adult guineas always roost beside the hen that mothered them if she is in the pen. They will fight other hens but never the mother. After trying for a few days to "shake" her unwelcome flock the hen usually settles down to the inevitable and pays no attention to her unwelcome followers.

Any ordinary chick feed is all right for guineas. The first feed may well be boiled egg, rolled oats or stale bread. After that any finely cracked grain will do. When they get out in the open they will get most of their living from insects and grass seeds. The old birds pick up a large part of their living, also. During the winter they subsist on the rations provided for the hens. If the first eggs that are laid are immediately put under hens,

birds large enough for the market may be had for the first of October.

PRODUCE INFERTILE EGGS.

The farmers of this country lose each year large sums because of improper methods of producing and handling eggs. One-third at least of this loss is easily preventable. It is due to the partial hatching of fertile eggs. The eggs laid by a hen may be either fertile or infertile, depending on whether or not the male bird has been allowed to run with the female. A fertile egg is one in which the germ has been fertilized by the male bird. Except for this process of fertilization, the male bird has no influence upon the eggs which the hens lay. Egg production is equally great in flocks from which roosters are excluded.

A fertile egg does not keep as well as an infertile one because the fertilized germ responds more readily to high temperatures than the unfertilized one. It is impossible to hatch an infertile egg or to cause a blood ring to form in one. Such eggs are much more likely to reach the table in good condition and there is much less spoilage in shipments composed entirely of them than in mixed shipments of fertile and infertile eggs.

After the hatching season, therefore, the male birds should be cooked, sold or confined. In approximately fourteen days after this all the eggs laid by the hens will be infertile. These can be marketed much more successfully under the adverse conditions that frequently prevail in the hot summer months.

Rules for Handling Eggs on the Farm.

Heat is the great enemy of eggs, both fertile and infertile. Farmers are urged to follow these simple rules, which cost nothing but time and thought and will add dollars to the poultry yard returns.

1. Keep the nests clean; provide one nest for every four hens.
2. Gather the eggs twice daily.
3. Keep the eggs in a cool, dry room or cellar.
4. Market the eggs at least twice a week.
5. Sell, kill, or confine all the male birds as soon as the hatching season is over.

WORMS IN FOWLS.

What can I give my hens and turkeys to rid them of the long white bowel worm? They are not sick but keep wiggling their tails and sometimes the turkeys pass them a number at a time. I lost most all my young turkeys last year and now I think it might have been on account of worms.

Genessee Co. A. G. Intestinal worms are very frequently found in all kinds of poultry, but usually they are not numerous enough to cause much trouble. Birds become infected by picking at the parts which have been expelled, and usually flocks which have been confined to a certain piece of ground for a considerable length of time are in a worse condition than others, and one of the preventive measures it to move the flock every two or three years to new ground.

The following treatment is a very effective one: Mix in the feed a teaspoonful of powdered pomegranate root bark for every fifty birds. If only a few birds are to be treated, it is well to follow this medicine with a purgative does of castor oil, about two teaspoonfuls. This treatment is considered effective for both hens and turkeys. Where birds are affected as your are it is policy to remove the excrement from the coop daily and destroy any of the worms expelled and the eggs by saturating the droppings with a ten per cent solution of sulphuric acid.

Grange.

Our Motto:—"The farmer is of more consequence than the farm, and should be first improved."

BUILDING THE HOME BY CO-OPERATION.

Paper read at Kent County Grange by Mrs. Clayton Johnson, of Bowne Grange.

If we are to make a success of our occupation, we must co-operate. A well regulated home needs co-operation of both husband and wife. The husband is handicapped if he has a partner whose aims and ambitions are along other lines, rather than agriculture. Oftentimes encouragement from the other half has shaped his whole plan of success. Just so with the home-builder. What are the requirements of a good home? That, we might say, depends on the mental scope of the builders. How high, how broad or how narrow the outlook on life. Not in the sense of four walls making the house, or a certain number of acres constituting a farm, but the soul quality that prevails in all.

The mere accumulation of money with that end in view would be so poor an excuse for effort as to make it a total failure from the start. But for the sake of a competence in old age, for the power to do good, to help those whom we are constantly wishing to help, for the leisure it gives us is to develop a higher degree of manhood or womanhood. For all of these the accumulation of at least a modest sum is desirable. In this case the architects and builders are one—yes, truly and literally one. For we cannot conceive of a true home building without the perfect co-operation of both husband and wife. Right here lies the secret of many failures in the home-making venture. The incompatibility of temperament, the seeing of things in different lights, the lack of charity, which makes a failure to provide the necessary harmony so essential to a united happy home.

In the first place, it is necessary for each to be satisfied with what they can pay for. The false system of credit, buying on the installment plan, while not as common in the country as in the city has been the downfall of thousands. The alluring advertisements in every paper seem as so many mouse traps for the young housewives. I would say, as in the words of the old song, sly, cunning mouse traps, you shall not catch me. The young couple who start out with this idea, as too many of our young people do, seem to think they must begin where their parents left off, are quite apt to strike a rock and get shipwrecked.

The woman who would succeed in doing her part in a co-operative spirit in the home must have a keen sense of what is worth while. She must have courage to banish many of the little ills that time and custom have established and thus make room for other things of so much more value. It pays to stop often and view from every angle the monuments we are erecting. In these days of haste and rush we may build heedlessly, thinking an ornamental structure may be placed on insecure foundation. This is an error in judgment, for the right kind of a life monument must be built on non- or from the ground up.

The work that comes to our hand to do is the work we should do well, whether it be to rake a lawn or to compound brain and muscle material for others to use in their accomplishments. The man or woman, whether old or young, who will meet life and its tasks in this brave spirit will build a monument which will stand the storms of time.

(Continued next week).

Farmers' Clubs

Address all communications relative to the organization of new Clubs to Mrs. J. S. Brown, Howell, Mich.

THE FARMERS' CLUB CAN HELP.

As announced in another column as a first step toward food preparedness in Michigan, thirty new county agents have been appointed to serve in forty counties in which farm bureaus have not been previously organized. It would be the duty of these new agents to aid the food preparedness board in the distribution of labor which may become available wherever it may be needed in their several counties. They will also perform a measure of the duties now discharged by county agents in organized counties.

To make their work most effective, county agents must serve groups rather than individuals so far as possible. The Farmers' Club is a good unit for effective work by the county agent. Notify the newly appointed county agent to your next Club meeting and there make plans for the utilization of his services by the Club and its members and for co-operation with him in such a manner as will serve to make his work in the county most effective in the way of increased contribution to the nation's food supply. Do not wait for the county agent to take the initiative, but get in touch with him at once, thereby helping both him and the Club membership.

CLUB DISCUSSIONS.

Will Aid Boy and Girl Club Work.—The East Nankin Farmers' Club met in March at the home of Chris Jorgensen. After an hour's social time the meeting was called to order by the president, Henry Lathers. About thirty members were present. After listening to several pieces of good music and recitations by the young people, the Club was introduced to Mr. Milton Carmichael, editor of the Detroit Courier, who is a member of the Federation Board of Wayne County, Michigan, and whose business it is to organize boys' and girls' clubs in the county. Mr. Carmichael explained that the federation board was composed of one member of each Farmers' Club and Grange in the county, these meeting together from time to time, in some central place have certain duties to perform, such as deciding who the county agent will be, and also to confer with such county agent in regard to the supervision of farm crops, the procuring of farm seeds, etc. The speaker went on to explain that a number of counties were already organized on these lines, and that the county agent would be paid a salary of \$2,400 per year. The county agent's duties are to look over the farms in the county, make suggestions, help in procuring good seed, also to aid the farmers in organizations for selling farm produce, also to meet with and address farmers' organizations. The federation board is also to look after boys' and girls' farm clubs. These clubs are composed of boys and girls from ten to seventeen years of age.

These boys and girls are each to have an acre of land on which to plant, cultivate and harvest certain crops under the inspection of the county agent, and according to certain rules there will be prizes given to several of the most successful. Mr. Carmichael hopes to organize a boys' and girls' club in this vicinity. After this interesting address a question box was introduced. One of the questions asked was about how many chickens should an enterprising farmer keep. Several members thought about one or two was enough on account of the high price of feed. Others thought from one to two hundred. A question was asked, "Should farmers in this vicinity plant their own seed potatoes where they have them, or should they send off to seedsmen or to other states for them?" It was thought by some that we might as well plant our own seed if we treat them with formaldehyde for scab and other diseases. On account of the lateness of the hour the other questions were passed over without discussion. As our Club was informed by Mr. Carmichael that we were entitled to a delegate to the federation board we proceeded to elect such delegate. It was moved and carried that Joseph McGarvey be our delegate to such board. After partaking of refreshments consisting of sandwiches, cake, ice cream and coffee, the Club adjourned.—W. S. Lathers, Cor. Sec.

Raynster

Reg. U. S. Pat. Off.

The Coat of Preparedness

You've wished a hundred times for a coat like this. It is the coat for wet, cold, inclement weather—all seasons—year after year. When you buy a Raynster, you are sure of getting something dependable. Choose either the coat illustrated, with its double texture, heavy rubber proofing and sewed, cemented and strapped seams, or a lighter single texture coat with rubber lining, or a rubber surface coat. Also auto coats. Raynsters are made in varied styles and fabrics, some for dress wear. You will be able to find a Raynster to meet your need exactly.

If your dealer cannot supply you with a Raynster, write to the address below and we will tell you where they can be obtained. Ask for interesting booklet, showing many styles of Raynsters for work and for dress.

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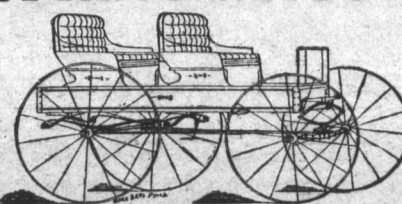
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POULTRY

ROSE COMB BROWN LEGHORNS

Eggs from prize winners. Farm range. Prices: 15 eggs \$1.00; 30 eggs \$2.00. D. ELON SPOTTS, Hillsdale, Mich.

BARRED ROCK HATCHING EGGS from prize-winning stock. 30 eggs \$2.50; 60 eggs \$5.00. Order from this ad. SAM STADEL, Chelsea, Michigan.

Barred Rock Eggs for hatching, \$1.00 per 15 or \$5.00 per 100. GEO. D. CLARKE, R. 2, Lowell, Mich.

BRED-TO-LAY Barred Plymouth Rocks Eggs 15 for \$1.00, 100 for \$3.75. L. G. Sly, Box 970 Harrison, Michigan

TRY some Silver Spangled Hamburg eggs for hatching. The Dutch o. Erlangen layers White Holland Turkey eggs. Fine Belgian Hare Does bred to high class Bucks. Pedigreed. Stamp for circulars. Riverview Farm, Vassar, Mich.

Lockwood's Laying Leghorns. S. C. White Leghorns. Eggs from select matings at farmer's prices. Chas. T. Lockwood, R. 4, Portland, Michigan.

Buff Wyandotte Cockerels \$3 each. Also Barred Rock and Wyandotte eggs for hatching, \$1.25 per 15. Mrs. R. W. BLACK, Caro, Michigan.

WHITE Wyandottes. A. 1 layers. Eggs for hatching, \$1.25 per 15, \$7.50 per 100. Special matings \$5 for 15. DAVID RAY, 700 Norris St., Ypsilanti, Michigan.

White Wyandottes, winter & summer layers. Eggs \$5.50 per 100 Baby Chix \$12 per 100. Satisfaction guaranteed. Hemlock Poultry & Stock Farm, Prescott, Mich.

White Holland Turkey Eggs from large 3 year old Toulouse. Geese Eggs from large 4 year old birds 35 cents each for a short time only. ALDEN WHITCOMB, Byron Center, Michigan

DUCKS. Pencilled Indian Runner Eggs white \$1.00 for 15; \$8.00 per 100. HUGH KEPHART, Dowagiac, Michigan.

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In S. C. White Leghorn cockerels, Rambouillet rams, Hampshire pigs (either sex) and Holstein bulls. A good chance for a small investment to reap the benefit of a large expenditure of capital and years of expert breeding.

Flanders Farm, Orchard Lake, Mich.

CATTLE.

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Bulls by BLACK QUALITY ITO, sire, First prize, Breeder's and Calf Herds Mich. State Fair 1916. We also won first on Exhibitors Herd, Jr. Champion Bull, Jr. Champion Female and Grand Champion Cow. Also breeders of Percheron, Hackney and Saddle Horses. **WOODCOTE STOCK FARM, IONIA, MICH.**

FOR SALE Good Angus bulls, bred cows, and heifers. Prices reasonable. **Geo. Hathaway & Son, Ovid, Mich.**

Registered Guernsey Heifer \$275 F. O. B. your city. Her sire is out of Pauline Spottwood, who has an A. R. O. record over 800 lbs. fat. She is bred to a May Rose bull, whose dam has an A. R. O. record of over 500 lbs. Has been bred about four months. **J. M. WILLIAMS, No. Adams, Mich.**

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.**

GUERNSEYS Bull calves for sale, from A. R. dams and cow-on-test. **GEO. N. CRAWFORD, Holton, Mich.**



Purebred Registered
HOLSTEIN CATTLE

In terms of dollars and cents the Holsteins are talking most effectively for themselves. Purebred Holstein cattle are the choice of every public institution or organization which attempts to produce milk in a scientific manner. Just ask a man who owns Holsteins, if you want to hear a story of prosperity. Every angle of Holstein superiority is fully covered in the books and pamphlets which are sent free for the asking. There's big money in the big "Black and White" Holsteins.

Send for **FREE Illustrated Descriptive Booklets**

The Holstein-Friesian Association of America
F. L. Houghton, Sec'y., Box 164, Brattleboro, Vt.

"TOP NOTCH" HOLSTEINS

Many years of careful management and systematic handling of our three large herds find us the breeders and owners of a cow that heads one of the only eight combinations of three direct generations of thirty pound cows in the United States. We have young bulls for sale sired by a son of this great cow. The blood of this cow in them, combined with that of other great animals of the breed in our herds, would insure most pleasing results in almost any herd. **MCPHERSON FARMS CO., Howell, Michigan.**

Bigelow's Holstein Farms, BREEDSVILLE, MICH.
Have Some Fine Registered Stock For Sale

Holstein Bulls

1 to 9 months old. Dam's A. R. O. Our herd sire is Johanna McKinley Segis 3d. 7 nearest Dams average 27.26. **BLISSVELDT FARMS, Jenison, Mich.**

Registered Holsteins. Very fine Young bull five months of age A. R. O. breeding. Satisfaction guaranteed. **W. B. Jones & J. F. Lutz, Cohoctah, Mich.**

Holstein Calves, 10 heifers, and 2 bulls 15-16ths pure. 5 weeks old, beautifully marked, \$20.00 each, crated for shipment anywhere. **Edgewood Farm, Whitewater, Wis.**

REG. HOLSTEINS: Herd headed by Albina Bonte Butter Boy No. 93124. Dam's record at 6 yrs. butter 28.58 lbs. milk 619.4. Yearly record at 2 1/2 yrs. butter 802 lbs. milk 1822 lbs. **W. B. READER, Howell, Mich.**

Cluny Stock Farm
100 REGISTERED HOLSTEINS 100 THE MILK AND BUTTER KIND

Five splendid bull calves sold since January 1st, 1917. Only three more ready for sale at this time. One from a sire whose dam holds sixth highest yearly butter record. One from a sire whose three nearest dams average 30.6 lbs. butter and 658 milk in 7 days. One from a son of Colantha Johanna Lad whose 7 nearest dams average 28 lbs. of butter and 587 lbs. milk. Write for pedigrees and prices.

R. BRUCE MCPHERSON, HOWELL, MICH.

OAK LEAF FARM

Herd Sire
Ypsilanti Sir Pletertje De Kol
Service bulls all sold. Buy a calf and raise it. Fine individuals 4 and 5 months old. **E. H. Gearhart & Son, Marcellus, Mich., R. No. 4.**

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

REG. Holstein Bull, ready for service. Sired by a half-brother of World's Champion cow. Send card for pedigree and price. **E. R. Cornell, Howell, Mich.**

Parham's Pedigree Stock Farm Offers reg. A. R. O. Male Calves, Show Bull ready for service no akin to cows, priced \$125. **R. B. PARHAM, Bronson, Mich.**

842 LBS. BUTTER

Is the average of the semi-official records of our herd bull sired (at 2 yrs.), his grand-dam (at 3 yrs.) and his great grand-dam. Three choice young bulls from A. R. O. dams. Herd tuberculin tested annually. Holsteins of course. **Peaceland Stock Farm, Three Rivers, Mich.** Chas. Peters, Herdsman, C. L. Brody, Owner, Port Huron, Mich.

WINNWOOD HERD

John H. Winn, Inc., Holton, Mich.
Reference: Old State Bank, Fremont, Mich.

Have for sale 6 Maplecrest Korndyke Hengerveld Holstein bulls. One 12 months, one 6 months; one 2 months, all out of A. R. O. dams. One made 19 lbs. butter in 7 days as a Jr. 2 year old. Another 21 lbs. in 7 days as a Jr. 3 year old. Also have five others, same bred from 2 to 6 months. Must sell at once, need the room. Our prices will surprise you. **John H. Winn, Holton, Michigan.**

Hatch Herd Holsteins

Second Annual Sale, Ypsilanti, Mich.

MAY 9, 10 A. M.

21 Granddaughters of King of the Pontiacs and Pontiac Korndyke.

This exclusive breeder's sale will include all of our this year's offerings. No one has been permitted to pick even one at private sale. It will include 21 daughters of our Senior Herd Sire, **KING PONTIAC JEWEL KORNDYKE, 94184**—son of King of the Pontiacs, out of a daughter of **DE KOL 2d's BUTTER BOY 3d**, and our Junior Herd Sire, **KING LUNDE PONTIAC KORNDYKE 15th, 142487**, out of a 30 lb. son of King of the Pontiacs, and one of the best daughters of **PONTIAC KORNDYKE**. There will also be offered choice sons of both sires ready for service and younger. Catalogs ready May first. Apply for same if interested to **WILLIAM B. HATCH, Ypsilanti, Mich.**

Jerseys and Duroc Jerseys

The most important thing in buying a Jersey bull is to get one backed up by generations of high producers.

Brookwater offers to sell a few choice bull calves of this kind.

They are selling—get yours soon. Also Duroc Jersey Fall Boars ready for spring service. Full particulars and price on application. Better yet, visit the farm.

H. W. MUMFORD, OWNER, BROOKWATER FARM, O. F. FOSTER, MANAGER, Ann Arbor, Mich., R. 7.

Butter Fat Counts

Holstein Bull Calves from a 30 lb. 6.53% Sire. Dams are grand daughters of the King of the Pontiacs. Their dams grand daughters of Sadie Vale Concordia the first 30 lb. cow.

EDWIN S. LEWIS, Marshall, Mich.

1200-lb. Bred Young Bulls

Their sire, Maplecrest DeKol Hengerveld. We offer one born Feb. 12, 1916, out of a 21-lb. cow from sister to 32-lb. cow. His grandsire is sire of the famous Banostine Belle DeKol, 1322.93 lbs. butter, 1 yr. Write for pedigree and price.

HILLCREST FARM, F. B. Lay, Mgr., Kalamazoo, Mich.

Ten Good Young Holstein Cows For Sale

I want to sell as soon as possible, **TEN GOOD YOUNG** cows. Most of them are bred to "The Milk & Butter Champion" a son of a world's record milk cow and his sire is a son of a world's record butter cow. We will have more cows than we can milk this Spring. So this is your chance to get a few good ones. Also have bull calves and a few bulls ready for service.

L. E. CONNELL, Fayette, Ohio

Choice Reg. Holstein Bulls

1 to 12 months old at Farmers Prices.
LONG BEACH FARM, Augusta, Mich.

For Sale A Yearling Heifer, pure bred Holstein, Sire, Colantha Johanna Cream-elle Lad, Dam, Elizabeth Segis Lyons. If you want something good, write, **Geo. D. Clarke, Vassar, 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.

2 Holstein Heifers by a 24 lb. bull in calf to 30 lb. bull. Bull calf 22.92 lb. dam. 30.21 lb. sire. Terms if wanted.

M. L. McLAULIN, Redford, Michigan.

Reg. Holstein Friesian Cows and Heifers, some A. R. O. \$125. Heifers nine months old \$100. Bulls \$40 up, with papers.

FRANK STAFEN, R. 3, Howard City, Mich.

HOLSTEIN COWS: bred yearlings and calves for sale. Every cow has produced a vigorous calf during year. **C. L. Hulet & Son, Okemos, Mich.**

For Sale Holstein bull calf, dam A. R. O. 24.13, 4 yr. old. Price \$60. Reg. and Del. One from untested dam \$90. **J. R. Hicks, St. Johns, Mich.**

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

Rinkland Herd Reg. Holstein Friesian Cattle Herd average 1200 lb. milk each. **John A. Rinko, Warren, Mich.**

On Our Easy Payment Plan we will ship you any registered Holstein Bull calf in our stables. Prices from \$50 up. **Ypsilanti Farms, Ypsilanti, Michigan**

\$175 Buys one Reg. Holstein Heifer and one Reg. Bull, both about six months old. Not akin. Richly bred, hearty and thrifty. **B. B. REAVEY, Akron, Mich.**

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

HEREFORDS

10 Bull Calves from 4 to 12 months old.

ALLEN BROS., PAW PAW, MICH.

FOR SALE Twenty-five Jersey cows, Eight registered, balance high grades. Excellent producers, guaranteed right. Also some bred yearling heifers, registered and high grades. Also some fall heifer calves from above stock. Good reasons for selling. Bell Phone—**Hadley, P. O. Metamora, Mich. R. 1, C. E. Hodgson, L. H. Riley.**

Jersey Bulls for Sale from high-producing dams, with testing Assoc. records, also on semi-official test. **C. B. Wehner, R. 6, Allegan, Mich.**

Jersey Bulls for sale, ready for service. Out of good producing dams. Prices right. **R. B. FOWLER, Hartford, Mich.**

JERSEYS FOR SALE Young bulls ready for service from R. of M. ancestors. **Meadowland Farm, Waterman & Waterman, Packard Road, Ann Arbor, Mich.**



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

conclusively that for pure dairy type, economy of production, richness of milk, long life and adaptability to feeds and climates—all these combined—she stands way above them all. This book "About Jersey Cattle" is free. Get your copy now. You'll find it mighty good reading.

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

FOR SALE REGISTERED JERSEY BULLS

Ready for service. Write your wants. **SMITH & PARKER, R. D. No. 4, Howell, Michigan**

FOR SALE Nine months old thoroughbred Jersey Bull—New England Star, Jr.; also thoroughbred Jersey Calves and Yearlings. Births reported to Am. Jersey Cattle Club. Belding Land & Improvement Co., Belding, Mich.

FOR SALE Yearling Jersey bull from register of merit stock. **HILLSDALE FARM JERSEYS, Great producers, Ypsilanti, Michigan**

Maple Hill Farm Registered Jersey Cattle
Stock under 2 1/2 years all sold. **J. R. Worthington, R. No. 7, Lansing, Michigan**

Lillie Farmstead Jersey Cattle. Bull calves from R. of M. Cows, also heifer calves and several bull heifers for sale. **Colon C. Lillie, Coopersville, Mich.**

The Wildwood Farm

Breeder of Line bred Majestystain of Jersey Cattle. Herd on R. of M. test. Tuberculin tested. Bull calves for sale. Type & Production is our motto. **Alvin Balden, Capac, Mich.**

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.**

Shorthorn Cattle of both Sex for Sale
W. W. KNAPP, Howell, Michigan.

Bidwell Shorthorns
"For Beef and Milk"

This heifer at 6 months has bone, size and quality—our own breeding. The blood of Scotch bulls, Imp. Shenstone Albino and Imp. Villager Registered stock always for sale.

BIDWELL STOCK FARM,
Box B, Tecumseh, Michigan.

RICHLAND SHORTHORNS

Sires in service, Village Archer and Albion Crest. 1st prize 2 year old and Junior Champion at the Mich. Stat Fair in 1916. We offer a number of young bulls and females for sale. Also some Aberdeen-Angus bulls of serviceable age reasonable prices. Write your wants. **Tawas City, Mich. C. H. Prescott & Sons, Prescott, Mich.**

Francisco Farm Shorthorns Big Type Poland Chinas

"They're rugged—They pay the rent." Nothing for sale at present.

P. P. POPE, R. R. 3, Mt. Pleasant, Mich.

FOR Sale—Reg. Short Horn Bulls by Maxwalton F. Monarch 2nd, a son of Avondale, from 11 to 13 mos. old. **John Schmidt, Reed City, R. No. 5, Michigan.**

Shorthorns For Sale Young bulls ready for service, also cows and heifers. **W. B. McQuillan, Howell, Michigan.**

Shorthorns For Sale. Young bulls \$100. Bred cows, and heifers \$150 for quick sale. Write **W. J. BELL, ROSE CITY, MICHIGAN.**

Cattle For Sale

2 Loads feeders and two loads yearling steers. Also 2 can show you any number 1, 2 and 3 years old from 600 to 1200 lbs. **Isaac Shanmush, Fairfield, Iowa, R-8.**

Bates Shorthorns. The original milk strain. No stock for sale at present. **J. B. Hummel, Mason, Michigan**

SHORTHORNS Maple Ridge Herd, Established 1867. Young bulls for sale. **J. E. Tanswell, Mason, Michigan.**

SILAGE INCREASED PROFIT ON CATTLE.

(Continued from page 543).

hay, instead of silage and straw, before they were turned to grass. From May 1 to October 1, they were pastured. During the four months following October 1 the cattle were fed 800 bushels of corn, ten tons of mixed hay and three tons of cottonseed meal. On February 5, 1916, they averaged 1149 pounds a head and were valued at \$8 a hundred. The sale price was \$221.16 less than the cost of the cattle and the value of the feed they consumed. However, \$307.50 worth of pork, was made behind these cattle, and consequently they returned a profit of \$86.54.

Mr. Cunningham's profits thus far had not been encouraging. However, the grazing operations as a whole proved profitable. Realizing that he must continue in the cattle business to find a market for his roughage and grass, he began to seek a means of finishing his cattle at less cost. The next lot of cattle was bought in February, 1916, at \$7.25 a hundred and averaged 638 pounds at home. From February 6 to May 1 they were fed twenty-five tons of silage, four tons of clover hay and one ton of cottonseed meal, after which they were grazed until October 1. The feed from October 1 to December 19 included no corn except that in the silage. During this period the cattle consumed seven tons of clover hay, three and a half tons of cottonseed meal and thirty-six tons of silage. They were valued at \$8.50 a hundred December 19, when they were sold for \$2,108.95. This, minus \$1,587.15, the original cost, including feed, left a profit of \$521.80. No hogs followed the cattle. The feeding plan in 1916 not only proved more profitable on high-priced feed than in 1915, but made a larger gain on less feed.

According to S. T. Simpson, of the Missouri College of Agriculture, Mr. Cunningham's 1916 feeding plan is similar to that of many other feeders. The use of silage and the reduction of the corn ration is the latest departure in beef making. While Mr. Cunningham's experience in itself is not conclusive, yet feeders and experiment stations are finding similar plans equally profitable and it is safe to assume that the principle is sound.

FEEDERS' PROBLEMS.

Spring Pasture for Hogs.

Will you please give me a little advice on pasture for pigs? I haven't got any pasture prepared for summer and would like to know what I could sow to make the best early pasture. I see a piece in the Michigan Farmer that I take, that rape and oats make good pasture.

Leelanau Co. S. M.
Probably a combination of peas, oats and rape would make as good an early hog pasture as anything which could be sown in the spring. This combination should be sown as early in the spring as possible, using say a bushel each of oats and peas, and about five pounds of rape seed per acre. Dwarf Essex rape seed should be used, as this variety is much more valuable as forage than other sorts.

Cottonseed Meal for Hogs.

Is cottonseed meal a good feed for hogs and young pigs, and if so with what other grain should it be fed for best results?

Kalamazoo Co. E. L. B.
Cottonseed meal is not a safe feed for hogs, being fatally poisonous to them when fed in considerable quantities. It should not be fed either alone or in combination with other feeds to young pigs. Tankage is perhaps the best protein bearing concentrate for pigs, but oil meal can be used in small quantities to advantage. Perhaps wheat middlings constitute the best balanced grain feed for young pigs. Corn meal and skim-milk can also be combined to form an excellent ration in combination with other feeds.

Veterinary.

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

Sprained Tendons.—I have a horse that was lame a year ago, caused by spraining back tendons. I applied a liniment and he recovered, remaining well all fall and winter. However, a week ago he went lame again and shows soreness in the tendons of both fore legs. What treatment do you advise? F. E. L., Decatur, Mich.—Clip hair off and apply one part powdered cantharides and four parts lard every two weeks, until he recovers.

Pica.—I would like to know what to feed cattle or what they lack in feed that makes them eat wood. I have been feeding silage, bean straw and hay. J. H. W., Kinde, Mich.—The causes of pica are not known; however, it is usually due to feeding spoiled forage or not supplying cattle with a balanced ration. Keeping the cattle out of doors on dry land, and preventing their eating food which is spoiled will usually prevent this ailment. The cattle should be kept in a dry, clean, and well ventilated stable, or else out of doors. Feed a good quality of mixed grain, clover, alfalfa or roots. Give 1 dr. of ground nux vomica, a tablespoonful of ground bone, a teaspoonful of air-slaked lime and 1 oz. of ground gentian at a dose in feed three times a day. Very often a change of feed and plenty of fresh air will correct the ailment without giving medicine.

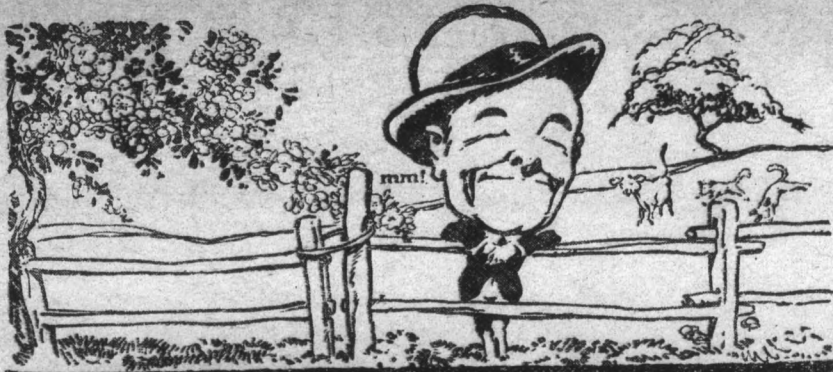
Nervous Heifer.—I have a milking heifer that freshened last October, was dehorned before being bred, is half Jersey and half Guernsey; but she is very nervous restless, rather than excitable. She tests well above five per cent. I thought in my quiet herd that she would settle down to business, but so far she pays little profit. Seems to be in a good healthy condition and coat is bright. There is nothing to disturb her that I know of. She is very gentle and does not hold up milk. Have tried lessening grain ration until her flow dropped. She has the same care and feed as the balance of herd, which are all doing as well as I could expect. It is doubtful whether she could be fattened even if dry. H. W. H., Holland, Mich.—She should be spayed, then fattened and sold, as I do not believe she will prove profitable for dairy purposes.

Goitre.—I have a calf that came on March 9, that has a hard growth near windpipe which seems to be movable up and down, but does not affect the calf's breathing. This is a nice heifer calf which I would like to keep for breeding purposes. Do you think an animal of this kind should be kept for that purpose? G. W., Gagetown, Mich.—I do not believe this a hereditary ailment. Clip hair off and apply one part red iodine mercury and eight parts of lard twice a week. Give calf 10 grs. of potassium iodide at a dose twice a day.

Dehorned Cow.—About two months ago I had a cow dehorned, since then she has not done well. She has lost flesh, given less milk and when she breathes makes a noise, but has no discharge from nose. M. K., Dorr, Mich.—Doubtless the wound on head became infected, or else the bone was perhaps shattered and is now diseased. The diseased portion of bone should be curetted off then apply equal parts of powdered alum, tannic acid and boric acid, covering stump with oakum and a bandage. Give her a tablespoonful of cooking soda and two tablespoonfuls of ground gentian at a dose in feed three times a day. When dehorning is done in the winter season, the stump should be protected from dust and cold air. Perhaps I should say that dehorning should not be done when the weather is very cold or very hot.

Abortion.—I have a valuable Jersey cow that gets with calf, but aborts two or three months later. W. A., Millbrook, Mich.—You had better discontinue using her for breeding purposes. There is perhaps a dilated condition of the neck of womb which makes it impossible for her to carry calf full period. If she suffered from contagious abortion, she should not abort so early the second year.

Warbles.—My cows have grubs in their backs. I believe you call them ox warbles, but I have forgotten the treatment for them. E. H. B., Ypsilanti, Mich.—Sharpen a pen knife, boil the blade in water for ten minutes, then open bunches, squeeze out grubs, kill them and apply tincture iodine, or one part coal tar disinfectant and 30 parts water occasionally and they will get well.



HOW do you know
that spring is in the air?

"Your Nose Knows"

By the fragrance! It's awakening Nature saying "good morning" to you across the fields—the fragrance of swelling buds, of new-plowed earth, of fresh green pastures. How wonderful it is! How sure a promise of returning life—"Your Nose Knows." Fragrance never misleads. It's the pure fragrance of a good tobacco, likewise, that promises sure pleasure in smoking and guarantees satisfaction.

There's such a promise in the pure fragrance of

Tuxedo

The Perfect Tobacco

For the tender, ripe leaves of which Tuxedo is blended have stored the Blue Grass sunshine of old Kentucky and bring to you a pure fragrance that has no equal. "Your Nose Knows."



Try this Test: Rub a little Tuxedo briskly in the palm of your hand to bring out its full aroma. Then smell it deep—its delicious, pure fragrance will convince you. Try this test with any other tobacco and we will let Tuxedo stand or fall on your judgment.

"Your Nose Knows"



Third Annual Sale Swigartdale-Berkshires

of The Livingston County Holstein Breeders Sale Co., Will Be Held at
Howell, Mich., May 17, 1917

At 10:30 A. M. at the Sale Pavilion on the Fair Grounds

We will offer 90 head of high-class registered Holsteins, consisting of three young bulls whose dams have records of 25 lbs. at 3 yrs. old, 29.68 lbs., and one whose dam has a semi-official record of nearly 25,000 lbs. of milk in one year, and the balance cows and heifers of choice breeding, over 50 have records or are from record cows, many of them are sired by 30-lb. bulls. Our reference sires are a high-class lot, several have dams with records from 30 to 35 lbs., and are by some of the best known bulls of the breed. Catalogs May 5th.

F. J. Fishbeck, Sec'y, Howell, Mich.

Shorthorns 3 Red Bull Calves, 6 months old. 1 Roan Bull, 2 years old, for sale. W. C. OSTUS, Hillsdale, Mich.

Shorthorns—Dairy or beef bred. Breeding stock all ages for sale at farmers prices. C. W. Orum, Secy. Cent. Mich., Shorthorn Breeders' Assn., McBride, Mich.

REG. RED POLLED CALVES of both sex, for sale. Will Oettle, R. R. 1, West Branch, Mich.

HOGS.

Durocs and Victorias

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

BERKSHIRES—A few good fall pigs left, either sex. Also booking orders for spring pigs. Pairs no akin. Chase Stock Farm, R. 1, Marlette, Michigan.

Berkshires, Boars, serviceable age, best blood lines. Registered. ELMHURST STOCK FARM, Almont, Mich.

Duroc Jerseys bred gilts for sale priced to sell. Hastings, Mich.

20c pork is nearly here. The Berkshire has paid the interest in the past, but now will lift the mortgage.

We produce the best in Berkshire type as proven by our merited success at Detroit and Grand Rapids the past two years, by winning most of the first and Grand Champions premiums. Winning the Premier Breeders' ribbon in 1916.

We have decided to place on sale 2nd prize boar (6 month old) Detroit 1916. He has developed splendidly, most perfect in type, has a grand back, shows wonderful growth and smoothness.

We have some very desirable gilts which we are just starting to breed, we would book your order for delivery when safe in pig or ship you one still open.

We would also remind you of our Holstein-Friesians. If you want a herd sire for use this fall or winter we have several bull calves from tested cows with wonderful milk records behind them.

All stock guaranteed to be as represented

SWIGARTDALE FARM
PETERSBURG, MICH.

40 Duroc Sows and Gilts will be bred to the best young Duroc Boars in Mich. A postal will bring description, breeding and price. Last fall boar pigs \$25 to \$40. Newton Barnhart, St. Johns, Mich.

Durocs For Sale Big Heavy Boned Fall boars and gilts, weight 125 lb. to 200 lb. each, not extra fat but in good breeding flesh. Also one yrl. Reg. Percheron Stallion, color black and a good one. M. A. Bray, Estate, Okemos, (Ingham Co.) 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.

Duroc Jerseys Fall boars ready for service, sired by a son of Orion Cherry King and Volunteer also booking orders for spring pigs, pairs not akin. F. J. DRODT, Monroe, Mich., R. 1.

Duroc Jerseys, Breeding Boars and Sept. Gilts J. H. Banghart, East Lansing, Mich.

DUROCS—Ten big smooth Sept. Gilts, also one extra good Sept. Boar by King the Col. All priced to move at once. E. D. Heydenberk, Wayland, Mich.

Durocs: Young Boars and Sows. Two Percheron stud colts. Barred Rock eggs for hatching. E. J. Aldrich, Tekonsha Mich. Bell Phone.

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

Duroc Sow Pigs, March farrow. Defender breeding \$10 each while they last. Prolific and early maturing. S. C. Hagenbuch, Three Rivers, 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. S. S. BENJAMIN, R. F. D. 10, Portland, Michigan

1/2 Ton O. I. C's. & Chester Whites 1/2 Ton 10 Oct. and Nov. boars sired by our undefeated Grand Champion School Master. The boar that has size and quality combined. All sold any age. Write and get our Catalogue its free and describes our champions. We do not say our hogs are the best but we win the championships to prove it. We have 100 sows bred to our champion boars for Mar. and Apr. farrow. HARRY T. CRANDELL & SON, Cass City, Mich.

CHOICE BRED GILTS Bred to Big Prince 5002, sired by Wildwood Prince 1130 lb. 3 yr. Grand Champion at Iowa, sold for \$750. Ship C. O. D. —J. Carl Jewett, Mason, Mich.

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.

O. I. C. and Chester White Swine Strictly Big Type with Quality. Gilts bred for Spring farrow, all sold. Five fine Sept. gilts bred for July farrow. Have a few good fall pigs left, either sex. We are also booking orders for early Spring pigs. Can furnish in pairs not akin. Newman's Stock Farm, Marlette, Mich. R. 1.

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's. Bred sows all sold. Have a few good last Sept. boars and this spring pigs. Good growthy stock. 1/2 mile west of depot. Otto B. Schultze, Nashville, Mich.

O. I. C. Thorough bred O. I. C. Swine all sold except fall pigs. O. D. Somerville, Grass Lake, Mich. B. D. 4.

O. I. C'S. All sold. Booking orders for the best of our winter and spring pigs. C. J. THOMPSON, Rockford, Michigan

O. I. C's. Buy the best and breed them better. Fall Gilts and Boars. CLOVER LEAF STOCK FARM, R. 1, Monroe, Mich.

O. I. C. bred sows and gilts all sold. A few long bodied heavy boned fall boars to offer. G. P. ANDREWS, Dansville, Michigan

O. I. C. SWINE. Nothing to offer. H. W. MANN, Dansville, Michigan.

Reg. O. I. C. Pigs Sired by a son of the \$700.00 Boar. Females \$12, males \$10.00. Reg. in buyers name. JAY J. NEFOY, R. 1, Plymouth, Mich.

Large Type P. C. for March 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.

L. S. P. C. yearly Gilts for August farrow. A few long bodied heavy boned boars ready for service. 2 sires fall boars by Smooth Jumbo, H. O. Swartz, Schoolcraft, Mich.

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

Large Stiled Poland China, fall and spring pigs. Shorthorn bull, 6 months old. R. P. Rock eggs \$1.50 per lb. Robert Neve, Pierson, Mich.

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.

Big Type Poland Chinas Sept. farrow, either sex, bred by Jumbo Wood, 800 lb. hog. A. A. WOOD & SON, Seline, Michigan.

Hampshire Swine. Nothing for sale but fall boars and gilts. Write for prices. FLOYD MYERS, R. No. 9, Decatur, Ind.

Big Type Poland China for spring pigs, satisfaction guaranteed. G. W. Holton, R. 11, Kalamazoo, Mich.

HAMPSHIRE SWINE My herd contains the blood lines of many of the most noted champions of the breed. My herd boar, Claytons Lad, 1823 is a brother of Look Out Lad, who was grand Champion at the National Swine Show. I am booking orders for spring pigs, to be shipped about May 1st. Write me for prices. George E. Starr, Grass Lake, Mich.

HORSES

Percheron Stallions 25 Must Be Sold

Also 2 Imported Clydesdale Stallions. Spring Sale Prices are now on

Palmer Bros.,

P. O. Belding, Ionia Co., Belding, Mich.

AT HALF PRICE

Registered Percherons. Big black stud colt coming 3 sound and sure. Big boned rugged filly 2 past, bred by M. A. C. Also pair of mares 4 and 5 years old. Come and see them.

JNO. C. BUTLER, Portland, Mich. Bell Phone.

REGISTERED PERCHERON Mares and Stallions priced to sell. Inspection invited. L. C. HUNT, EATON RAPIDS, MICH.

Stock Ads. Continued on Page 555

BREEDERS' DIRECTORY.

Change of Copy or Cancellations must reach us Ten Days before date of publication.

We Offer a Few Special Bargains In S. C. White Leghorn cockerels, Ram-bouillet rams, Hampshire pigs (either sex) and Holstein bulls. A good chance for a small investment to reap the benefit of a large expenditure of capital and years of expert breeding.

Flanders Farm, Orchard Lake, Mich.

CATTLE.

ABERDEEN-ANGUS

Bulls by BLACK QUALITY LTD. sire, First prize, Breeders and Calf Herds Mich. State Fair 1916. We also won first on Exhibitors Herd, Jr. Champion Bull, Jr. Champion Female and Grand Champion Cow. Also breeders of Percheron, Hackney and Saddle Horses. WOODCOTE STOCK FARM, IONIA, MICH.

FOR SALE Good Angus bulls, bred cows, and heifers. Prices reasonable. Geo. Hathaway & Son, Grand Rapids, Mich.

Registered Guernsey Heifer \$75 F. O. B. your city. Her sire is out of Audine Spottwood, who has an A. R. O. record over 800 lbs. fat. She is bred to a May Rose bull, whose dam has an A. R. O. record of over 200 lbs. Has been bred about four months. J. M. WILLIAMS, No. Adams Mich.

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.

GUERNSEYS Bull calves for sale, from A. R. dams and cows on test. GEO. N. CRAWFORD, Holton, Mich.



Purebred Registered HOLSTEIN CATTLE

In terms of dollars and cents the Holsteins are talking most effectively for themselves. Purebred Holstein cattle are the choice of every public institution or organization which attempts to produce milk in a scientific manner. Just ask a man who owns Holsteins, if you want to hear a story of prosperity. Every angle of Holstein superiority is fully covered in the books and pamphlets which are sent free for the asking. There's big money in the big "Black and White" Holsteins.

Send for **FREE** Illustrated Descriptive Booklets

The Holstein Friesian Association of America
E. L. Houghton, Sec'y., Box 164, Brattleboro, Vt.

"TOP NOTCH" HOLSTEINS

Many years of careful management and systematic handling of our three large herds find us the breeders and owners of a cow that heads one of the only eight combinations of three direct generations of thirty pound cows in the United States. We have young bulls for sale sired by a son of this great cow. The blood of this cow in them, combined with that of other great animals of the breed in our herds, would insure most pleasing results in almost any herd. McPHERSON FARMS CO., Howell, Michigan.

Bigelow's Holstein Farms, BREEDSVILLE, MICH.

Have Some Fine Registered Stock For Sale

Holstein Bulls

Two 9 months old. Dams A. R. O. Our herd sire is Johanna McKinley Segle 3d. 7 nearest Dams average 27.25. BLISSVELDT FARMS, Jenison, Mich.

Registered Holsteins. Very fine Young bull five months of age A. R. O. breeding satisfaction guaranteed. W. B. Jones & J. F. Lutz, Colostah, 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. Bull Boy No. 9324. Bull record at 6 yrs. butter 23.25 lbs. milk 6194. Yearly record at 25 yrs. butter 82 lbs. milk 1862 lbs. W. B. READER, Howell, Mich.

Cluny Stock Farm 100 REGISTERED HOLSTEINS 100 THE MILK AND BUTTER KIND

One splendid bull calves sold since January 1st, 1917. One fine cow ready for sale at this time. One from cow sired by a son of the best bull in the world. One from a son of a sire whose three nearest dams average 27.25 lbs. milk and 658 lbs. butter in 7 days. One from a son of a sire whose 7 nearest dams average 28 lbs. of butter and 587 lbs. milk. Write for pedigree and prices.

R. BRUCE McPHERSON, HOWELL, MICH.

OAK LEAF FARM

Ypsilanti Sr. Pietertje De Kol

One cow sold. Buy a calf and raise it. Fine record at 4 and 5 months old. E. H. Gearhart & Son, Marquette, Mich., R. No. 4.

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

REG. Holstein Bull ready for service. Sired by a Dutch brother of World's Champion cow. Send card for pedigree and price. E. R. Cornell, Howell, Mich.

Parham's Pedigree Stock Farm Offers reg. A. R. O. Holstein bulls. One 12 months, one 6 months, one 2 months, all out of A. R. O. dams. One made 19 lbs. butter in 7 days as a Jr. 2 year old. Another 21 lbs. in 7 days as a Jr. 3 year old. Also have five others, same record from 2 to 6 months. Must sell at once, need the room. Our prices will surprise you. John H. Winn, Holton, Michigan.

842 Lbs. BUTTER

In the average of the semi-official records of our herd (last year) 23 yrs. his grand-dam (at 3 yrs.) and his great-grand-dam. Three choice young bulls from A. R. O. dams. Herd tuberculin tested annually. Holsteins of choice. Peace Land Stock Farm, Three Rivers, Mich. (near Pelee). Bedsman, C. L. Body, Owner, Port Huron, Mich.

WINNWOOD HERD

John H. Winn, Inc., Holton, Mich.
Reference: Old State Bank, Fremont, Mich.

Have for sale 6 Maplecrest Korndyke Hengerveld Holstein bulls. One 12 months, one 6 months, one 2 months, all out of A. R. O. dams. One made 19 lbs. butter in 7 days as a Jr. 2 year old. Another 21 lbs. in 7 days as a Jr. 3 year old. Also have five others, same record from 2 to 6 months. Must sell at once, need the room. Our prices will surprise you. John H. Winn, Holton, Michigan.

Hatch Herd Holsteins

Second Annual Sale, Ypsilanti, Mich.

MAY 9, 10 A. M.

21 Granddaughters of King of the Pontiacs and Pontiac Korndyke.

This exclusive breeder's sale will include all of our this year's offerings. No one has been permitted to pick even one at private sale. It will include 21 daughters of our Senior Herd Sire, KING PONTIAC JEWEL KORNDYKE, 94181—son of King of the Pontiacs, out of a daughter of DE KOL 2d's BUTTER BOY 3d, and our Junior Herd Sire, KING LUNDE PONTIAC KORNDYKE 15th, 142187, out of a 30 lb. son of King of the Pontiacs, and one of the best daughters of PONTIAC KORNDYKE. There will also be offered choice sons of both sires ready for service and younger. Catalogs ready May first. Apply for same if interested to WILLIAM B. HATCH, Ypsilanti, Mich.

Jerseys and Duroc Jerseys

The most important thing in buying a Jersey bull is to get one backed up by generations of high producers.

Brookwater offers to sell a few choice bull calves of this kind.

They are selling—get yours soon. Also Duroc Jersey Fall Boars ready for spring service. Full particulars and price on application. Better yet, visit the farm.

H. W. MUMFORD, OWNER. BROOKWATER FARM. O. F. FOSTER, MANAGER.

Ann Arbor, Mich., R. 7.

Butter Fat Counts

Holstein Bull Calves from a 30 lb. 6537 Sire. Dams are grand daughters of the King of the Pontiacs. Their dams grand daughters of Sadie Vale Concordia the first 30 lb. cow.

EDWIN S. LEWIS, Marshall, Mich.

1200-lb. Bred Young Bulls

Their sire, Maplecrest De Kol Hengerveld. We offer one born Feb. 12, 1916, out of a 21 lb. cow from sister Ransome Belle De Kol, 1322.93 lbs. butter, 131. Write for pedigree and price.

HILLCREST FARM, F. B. Lay, Mgr. Kalamazoo, Mich.

Ten Good Young Holstein Cows For Sale

I want to sell as soon as possible, TEN GOOD YOUNG cows. Most of them are bred to "The Milk & Butter Champion" a son of a world's record milk cow and his sire is a son of a world's record butter cow. We will have more cows than we can milk this Spring. So this is your chance to get a few good ones. Also have bull calves and a few bulls ready for service.

L. E. CONNELL, Fayette, Ohio

Choice Reg. Holstein Bulls

1 to 12 months old at Farmers Prices.

LONG BEACH FARM, Augusta, Mich.

For Sale A Yearling Heifer, pure bred Holstein, Sire, Colantha Johanna Cream-elle Lad, Dam, Elizabeth Segre Lyons. If you want something good, write, Geo. D. Clarke, Vassar, 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.

2 Holstein Heifers

by a 21 lb. bull in calf to 30 lb. bull. Bull calf 22.92 lb. dam. 30.21 lb. sire. Terms if wanted.

M. L. McLAULIN, Redford, Michigan.

Reg. Holstein Friesian

Cows and Heifers, some A. R. O. 8125. Heifers nine months old \$100. Bulls \$40 up, with papers.

FRANK STAFFEN, R. 3, Howell and Co., Mich.

HOLSTEIN COWS

bred yearlings and calves for sale. Every cow has produced a vigorous calf during year. C. L. Hulet & Son, Okemos, Mich.

For Sale

Holstein bull calf, dam A. R. O. 2183. Exp. sold Price \$80. Reg. and Incl. One from untested dam \$90. J. R. Hicks, St. Johns, Mich.

Registered Holstein

Friesian Heifers, 3 to 6 mos. old. Some from 20 lb. sires. Priced to sell. Fred J. Lange, Schwanau, Mich.

Rinkland Herd

Reg. Holstein Friesian Cattle. Herd average 1300 lb. milk each. John A. Rinke, Warren, Mich.

On Our Easy Payment Plan

we will ship you any registered Holstein Bull calf in our stable. Price from \$20 up. Ypsilanti Farms, Ypsilanti, Michigan.

\$175 Buys one Reg. Holstein Heifer and one Reg. Bull

both about six months old. Not akin. Richly bred, hearty and thrifty. B. B. REAVEY, Alton, Mich.

20 Herefords

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

HEREFORDS

10 Bull Calves from 4 to 12 months old.

ALLEN BROS., PAW PAW, MICH.

FOR SALE

Twenty-five Jersey cows, eight registered, balance high grades. Excellent producers, guaranteed right. Also some bred yearling heifers, registered and high grades. Also some fall heifer calves from above stock. Good reasons for selling. Bell Phone—Hawley, P. O. Motmanova, Mich. R. 1, C. E. Hodgson, L. H. Riley.

Jersey Bulls for Sale

from high-producing dams, with testing also, records, also on semi-official test. C. B. Weiner, R. 6, Allegan, Mich.

Jersey Bulls

for sale, ready for service. Out of good producing dams. Prices right. R. B. FOWLER, Hartford, Mich.

JERSEYS FOR SALE

Young bulls ready for service from R. of M. ancestors. Meadowland Farm, Waterman & Waterman, Packard Road, Ann Arbor, Mich.

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

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

FOR SALE REGISTERED JERSEY BULLS
Ready for service. Write your wants. SMITH & PARKER, R. D. No. 4, Howell, Michigan

FOR SALE Nine months old thoroughbred Jersey Bull New England Star, Jr. also thoroughbred Jersey Calves and Yearlings. Births reported to Am. Jersey Cattle Club, Belding Land & Improvement Co., Belding, Mich.

FOR SALE Yearling Jersey bull from registered merit stock. HILLSDALE FARM JERSEYS. Great producers. C. & O. DEAKE, Ypsilanti, Michigan

Maple Hill Farm Registered Jersey Cattle
Stock under 25 years old sold. J. R. Worthington, R. No. 7, Lansing, Michigan

Lillie Farmstead Jersey Cattle. Bull calves from R. of M. Cows, also heifer calves and several bred heifers for sale. Colon C. Lillie, Coopersville, Mich.

The Wildwood Farm
Breeder of Line bred Majesty strain of Jersey Cattle. Herd on R. of M. test. Tuberculin tested. Bull calves for sale. Type & Production is our motto. Alvin Baiden, Capre, Mich.

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.

Shorthorn Cattle of both Sex for Sale
W. W. KNAPP, Howell, Michigan.

Bidwell Shorthorns

"For Beef and Milk"

This heifer at 6 months has bone, size and quality on cow breeding. The blood of Scotch bulls, Imp. Shensone Albino and Imp. Village. Registered stock always for sale.

BIDWELL STOCK FARM,
Box B, Tecumseh, Michigan.

RICHLAND SHORTHORNS
Sires in service. Village Archer and Albion Crest. 1st prize 2 year old and Junior Champion at the Mich. State Fair in 1915. No other number of young bulls and females for sale. Also some Aberdeen Angus bulls of serviceable age reasonable prices. Write your wants. Tawas City, Mich. C. H. Prescott & Sons, Prescott, Mich.

Francisco Farm Shorthorns Big Type Poland Chinas
"They're rugged. They pay the rent."
Nothing for sale at present.
P. P. POPE, R. R. 3, Mt. Pleasant, Mich.

FOR Sale Reg. Short Horn Bulls by Maxwellton F. Monarch 2nd, a son of Acadia, from 11 to 12 mos. old. John Schmidt, Reed City, R. No. 3, Michigan.

Shorthorns For Sale Young bulls ready for service, also cows and heifers. W. B. McQuillan, Howell, Michigan.

Shorthorns For Sale. Young bulls \$100. Bred cows, and heifers \$150 for quick sale. Write W. J. BELL, ROSE CITY, MICHIGAN.

Cattle For Sale

2 Loads feeders and two loads yearling steers. Also can show you any number 1, 2 and 3 years old from 600 to 1200 lbs. Isaac Shanstun, Fairfield, Iowa, R. 8.

Bates Shorthorns. The original milk strain. No stock for sale at present. J. B. Hummel, Mason, Michigan

SHORTHORNS Maple Ridge Herd, established 1867. Young bulls for sale. J. E. Tanswell, Mason, Michigan.

SILAGE INCREASED PROFIT ON CATTLE.

(Continued from page 543).

hay, instead of silage and straw, before they were turned to grass. From May 1 to October 1, they were pastured. During the four months following October 1 the cattle were fed 800 bushels of corn, ten tons of mixed hay and three tons of cottonseed meal. On February 5, 1916, they averaged 1149 pounds a head and were valued at \$8 a hundred. The sale price was \$221.16 less than the cost of the cattle and the value of the feed they consumed. However, \$307.50 worth of pork was made behind these cattle, and consequently they returned a profit of \$86.54.

Mr. Cunningham's profits thus far had not been encouraging. However, the grazing operations as a whole proved profitable. Realizing that he must continue in the cattle business to find a market for his roughage and grass, he began to seek a means of finishing his cattle at less cost. The next lot of cattle was bought in February, 1916, at \$7.25 a hundred and averaged 638 pounds at home. From February 6 to May 1 they were fed twenty-five tons of silage, four tons of clover hay and one ton of cottonseed meal, after which they were grazed until October 1. The feed from October 1 to December 19 included no corn except that in the silage. During this period the cattle consumed seven tons of clover hay, three and a half tons of cottonseed meal and thirty-six tons of silage. They were valued at \$8.50 a hundred December 19, when they were sold for \$2,108.95. This, minus \$1,587.15, the original cost, including feed, left a profit of \$521.80. No hogs followed the cattle. The feeding plan in 1916 not only proved more profitable on high-priced feed than in 1915, but made a larger gain on less feed.

According to S. T. Simpson, of the Missouri College of Agriculture, Mr. Cunningham's 1916 feeding plan is similar to that of many other feeders. The use of silage and the reduction of the corn ration is the latest departure in beef making. While Mr. Cunningham's experience in itself is not conclusive, yet feeders and experiment stations are finding similar plans equally profitable and it is safe to assume that the principle is sound.

FEEDERS' PROBLEMS.

Spring Pasture for Hogs.

Will you please give me a little advice on pasture for pigs? I haven't got any pasture prepared for summer and would like to know what I could sow to make the best early pasture. I see a piece in the Michigan Farmer that I take, that rape and oats make good pasture.

Leelanau Co. S. M.
Probably a combination of peas, oats and rape would make as good an early hog pasture as anything which could be sown in the spring. This combination should be sown as early in the spring as possible, using say a bushel each of oats and peas, and about five pounds of rape seed per acre. Dwarf Essex rape seed should be used, as this variety is much more valuable as forage than other sorts.

Cottonseed Meal for Hogs.

Is cottonseed meal a good feed for hogs and young pigs, and if so with what other grain should it be fed for best results?

Kalamazoo Co. E. L. B.
Cottonseed meal is not a safe feed for hogs, being fatally poisonous to them when fed in considerable quantities. It should not be fed either alone or in combination with other feeds to young pigs. Tankage is perhaps the best protein bearing concentrate for pigs, but oil meal can be used in small quantities to advantage. Perhaps wheat middlings constitute the best balanced grain feed for young pigs. Corn meal and skim-milk can also be combined to form an excellent ration in combination with other feeds.

Veterinary.

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

Sprained Tendons.—I have a horse that was lame a year ago, caused by spraining back tendons. I applied a liniment and he recovered, remaining well all fall and winter. However, a week ago he went lame again and shows soreness in the tendons of both fore legs. What treatment do you advise? F. E. L., Decatur, Mich.—Clip hair off and apply one part powdered cantharides and four parts lard every two weeks, until he recovers.

Pica.—I would like to know what to feed cattle or what they lack in feed that makes them eat wood. I have been feeding silage, bean straw and hay. J. H. W., Kinde, Mich.—The causes of pica are not known; however, it is usually due to feeding spoiled forage or not supplying cattle with a balanced ration. Keeping the cattle out of doors on dry land, and preventing their eating food which is spoiled will usually prevent this ailment. The cattle should be kept in a dry, clean, and well ventilated stable, or else out of doors. Feed a good quality of mixed grain, clover, alfalfa or roots. Give 1 dr. of ground nuxvomica, a tablespoonful of ground bone, a teaspoonful of air-slaked lime and 1 oz. of ground gentian at a dose in feed three times a day. Very often a change of feed and plenty of fresh air will correct the ailment without giving medicine.

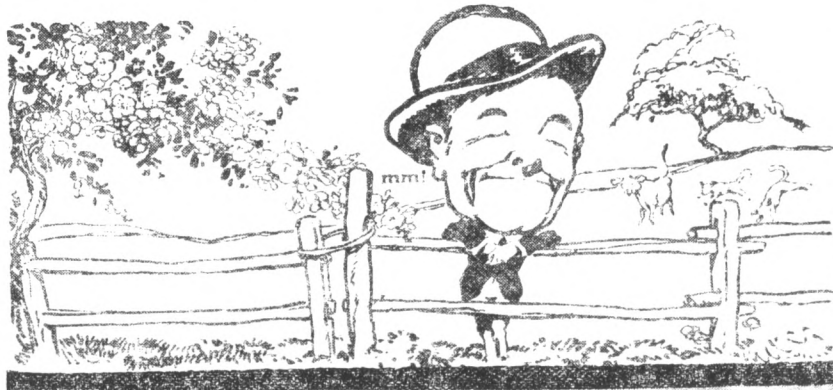
Nervous Heifer.—I have a milking heifer that freshened last October, is half Jersey and half Guernsey; but she is very nervous restless, rather than excitable. She tests well above five percent. I thought in my quiet herd that she would settle down to business, but so far she pays little profit. Seems to be in a good healthy condition and coat is bright. There is nothing to disturb her that I know of. She is very gentle and does not hold up milk. Have tried lessening grain ration until her flow dropped. She has the same care and feed as the balance of herd, which are all doing as well as I could expect. It is doubtful whether she could be fattened even if dry. H. W. H., Holland, Mich.—She should be spayed, then fattened and sold, as I do not believe she will prove profitable for dairy purposes.

Goitre.—I have a calf that came on March 9, that has a hard growth near windpipe which seems to be movable up and down, but does not affect the calf's breathing. This is a nice heifer calf which I would like to keep for breeding purposes. Do you think an animal of this kind should be kept for that purpose? G. W., Gagetown, Mich.—I do not believe this a hereditary ailment. Clip hair off and apply one part red iodine mercury and eight parts of lard twice a week. Give calf 10 grs. of potassium iodide at a dose twice a day.

Dehorned Cow.—About two months ago I had a cow dehorned, since then she has not done well. She has lost flesh, given less milk and when she breathes makes a noise, but has no discharge from nose. M. K., Dor, Mich.—Doubtless the wound on head became infected, or else the bone was perhaps shattered and is now diseased. The diseased portion of bone should be cut off then apply equal parts of powdered alum, tannic acid and boric acid, covering stump with oakum and a bandage. Give her a tablespoonful of cooking soda and two tablespoonfuls of ground gentian at a dose in feed three times a day. When dehorning is done in the winter season, the stump should be protected from dust and cold air. Perhaps I should say that dehorning should not be done when the weather is very cold or very hot.

Abortion.—I have a valuable Jersey cow that gets with calf, but aborts two or three months later. W. A., Millbrook, Mich.—You had better discontinue using her for breeding purposes. There is perhaps a dilated condition of the neck of womb which makes it impossible for her to carry calf full period. If she suffered from contagious abortion, she should not abort so early the second year.

Warbles.—My cows have grubs in their backs. I believe you call them ox warbles, but I have forgotten the treatment for them. E. H. B., Ypsilanti, Mich.—Sharpen a pen knife, boil the blade in water for ten minutes, then open bunches, squeeze out grubs, kill them and apply tincture iodine, or one part coal tar disinfectant and 30 parts water occasionally and they will get well.



HOW do you know
that spring is in the air?

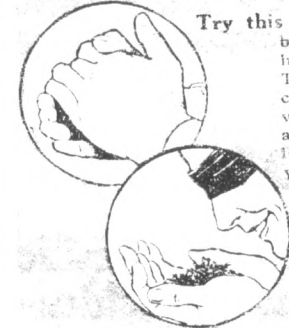
"Your Nose Knows"

By the fragrance! It's awakening Nature saying "good morning" to you across the fields—the fragrance of swelling buds, of new-plowed earth, of fresh green pastures. How wonderful it is! How sure a promise of returning life—"Your Nose Knows." Fragrance never misleads. It's the pure fragrance of a good tobacco, likewise, that promises sure pleasure in smoking and guarantees satisfaction.

There's such a promise in the pure fragrance of

Tuxedo
The Perfect Tobacco

For the tender, ripe leaves of which Tuxedo is blended have stored the Blue Grass sunshine of old Kentucky and bring to you a pure fragrance that has no equal. "Your Nose Knows."



Try this Test: Rub a little Tuxedo briskly in the palm of your hand to bring out its full aroma. Then smell it deep—its delicious, pure fragrance will convince you. Try this test with any other tobacco and we will let Tuxedo stand or fall on your judgment—
"Your Nose Knows"

The American Tobacco Co.



Third Annual Sale

of The Livingston County Holstein Breeders Sale Co., Will Be Held at
Howell, Mich., May 17, 1917

At 10:30 A. M. at the Sale Pavilion on the Fair Grounds

We will offer 90 head of high-class registered Holsteins, consisting of three young bulls whose dams have records of 25 lbs. at 3 yrs. old, 29.68 lbs. and one whose dam has a semi-official record of nearly 25,000 lbs. of milk in one year, and the balance cows and heifers of choice breeding, over 50 have records or are from record cows, many of them are sired by 30-lb. bulls. Our reference sires are a high-class lot, several have dams with records from 30 to 35 lbs., and are by some of the best known bulls of the breed. Catalogs May 5th.

F. J. Fishbeck, Sec'y, Howell, Mich.

Shorthorns—3 Red Bull Calves, 8 months old. W. C. OSIGS, Hillsdale, Mich.

Shorthorns—Dairy or beef bred. Breeding stock all ages for sale at farmers' prices. C. W. Grant, Secy. Cent. Mich., Shorthorn Breeders' Assn., McAdams, Mich.

REG. RED POLLED CALVES of both sexes, for sale. Will Gottle, R. R. 1, West Branch, Mich.

HOGS.

Durocs and Victorias

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

BERKSHIRES—A few good fall pigs left, either sex. Also booking orders for spring pigs. Pairs not akin. Chase Stock Farm, R. 1, Marquette, Michigan.

Berkshires, Boars, serviceable age, best blood. Registered. ELMHURST STOCK FARM, Almont, Mich.

Duroc Jerseys bred gilts for sale priced to sell. Hastings, Mich.

Swigartdale-Berkshires

The pork is nearly here. The Berkshire has paid the interest in the past, but now will lift the mortgage.

We produce the best in Berkshire type as proven by our merited success at Detroit and Grand Rapids the past two years, by winning 1st of the first and Grand Champions premiums. Winning the Premier Breeder's ribbon in 1916.

We have decided to place on sale 2nd prize boar 6 months old, Detroit 1916. He has developed splendidly, most perfect in type, has a grand back, shows wonderful growth and smoothness.

We have some very desirable gilts which we are just starting to breed, we would book your order for delivery when safe in pig or ship you one still open.

We would also remind you of our Holstein-Friesians. If you want a herd sire for use this fall or winter we have several bull calves from tested cows with wonderful milk records behind them.

All stock guaranteed to be as represented

SWIGARTDALE FARM
PETERSBURG, MICH.

40 Duroc Sows and Gilts will be bred to the two best young Duroc Boars in Mich. A postal will bring description, breeding and price. Last fall boar pigs \$25 to \$40. Newton Barnhart, St. Joseph, Mich.

Durocs For Sale Big Heavy Boned Fall boars and gilts, weight 125 lb. to 250 lb. each, not extra fat but in good breeding flesh. Also one r. Reg. Percheron Stallion, color black and a good one. M. A. Bray, Estate, Okemos, (Ingham Co.) Mich.

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

Duroc Jerseys Fall boars ready for service, sired by 2d prize son of Orion Cherry King and Voltaire also booking orders for spring pigs, pairs not akin. E. J. DRODOL, Monroe, Mich. R. 1.

Duroc Jerseys. Breeding Boars and Sept. Gilts J. H. Banghart, East Lansing, Mich.

DUROCS—very big smooth Sept. Gilts, also one extra good Sept. Boar by King the Col. All priced to move at once. E. D. Heydenberk, Wayland, Mich.

Durocs: Young Boars and Sows. Two Percheron stud colts. Barred Rock eggs for hatching. E. J. Aldrich, Tekonsha, Mich. Bell Phone.

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

Duroc Sow Pigs. March farrow. Defender breeding through childrens last. Profitable and early maturing. S. C. Hagenbuch, Three Rivers, 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

1/2 Ton O. I. C's. & Chester Whites 1/2 Ton 10 Oct. and Nov. boars sired by our undefeated Grand Champion School Master. The boar that has size and quality combined. All sold any age. Write and get our Catalogues free and describe our champions. We do not sell our hogs at the best but we sell in the champion hogs for March and April farrows. HARRY J. GRANDELL & SON, Cass City, Mich.

CHOICE BRED GILTS Bred to Big Prince 3000, sired by W. D. Wood Prince 110 lb. 4 yr. Grand Champion at Iowa, sold for \$750. Ship C. D. D. J. Carl Jewett, Mason, Mich.

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

O. I. C. and Chester White Swine Strictly Big Type with Quality. Gilts bred for Spring farrow, all sold. Five fine Sept. gilts bred for July farrow. Have a few good fall pigs left, either sex. We are also booking orders for early Spring pigs. Can furnish in pairs, not akin. Newman's Stock Farm, Marquette, Mich. R. 1

O. I. C. SWINE: 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, Dor, Mich.

O. I. C's. Bred sons all sold. Have a few good last Sept. boars and this spring pigs. Good growing stock. 1/2 mile west of depot. Otto R. Schelze, Nashville, Mich.

O. I. C. Thorough bred O. I. C. Swine all sold but except fall pigs. O. D. Somerville, Grass Lake, Mich. R. D. 1

O. I. C'S. All sold. Booking orders for the best of our winter and spring pigs. C. J. THOMPSON, Rockford, Michigan

O. I. C's. Bred the best and breed them better. O. I. C's. Fall Gilts and Boars. C. E. LOVER LEAL STOCK FARM, R. 1, Monroe, Mich.

O. I. C. Good sons and gilts all sold. A few long bodied heavy boned fall boars to offer. G. P. ANDREAS, Dansville, Michigan

O. I. C. SWINE. Nothing to offer at present. J. W. MANN, Dansville, Michigan.

Reg. O. I. C. Pigs Sired by a son of the \$3,000 Boar. Females \$10, males \$100. Reg. in business name, JAY J. NEELY, R. 1, Plymouth, Mich.

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. F. LIVINGSTON, Parma, Mich.

L. S. P. Early gilts for August farrow. A few long bodied heavy boned boars ready for service. 2 nice fall boars by Samoth Jumbo Boar, sired by S. C. Smith, Mich.

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

Large Stiled Poland China, fall and spring pigs. Shorthorn bull, 6 months old. R. P. Rock eggs \$1.50 per lb. Robert Neve, Piquette, Mich.

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

Big Type Poland Chinas Sept. farrow, either sex, sired by Jumbo Boar, sold by Jumbo Wood, \$40 lb. hog. A. A. WOOD & SON, Pellene, Michigan

Hampshire Swine. Nothing for sale but fall boars and gilts. Write for prices. FLOYD MYERS, R. No. 9, Decatur, Ind.

Big Type Poland China fall boars. Am booking orders for spring pigs, satisfaction guaranteed. G. W. Rollon, R. H. Kalamazoo, Mich.

HAMPSHIRE SWINE My herd contains the blood of many of the most noted champions of the breed. My herd boar, Claxton Lad, 1873 is a brother of Look Out Lad, champion at the National and State Shows. I am booking orders for spring pigs, to be shipped about May 1st. Write me for prices. George E. Starr, Grass Lake, Mich.

HORSES

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Also 2 Imported Clydesdale Stallions. Spring Sale
Prices are now on

Palmer Bros.,
P. O. Belding, Ionia Co., Belding, Mich.

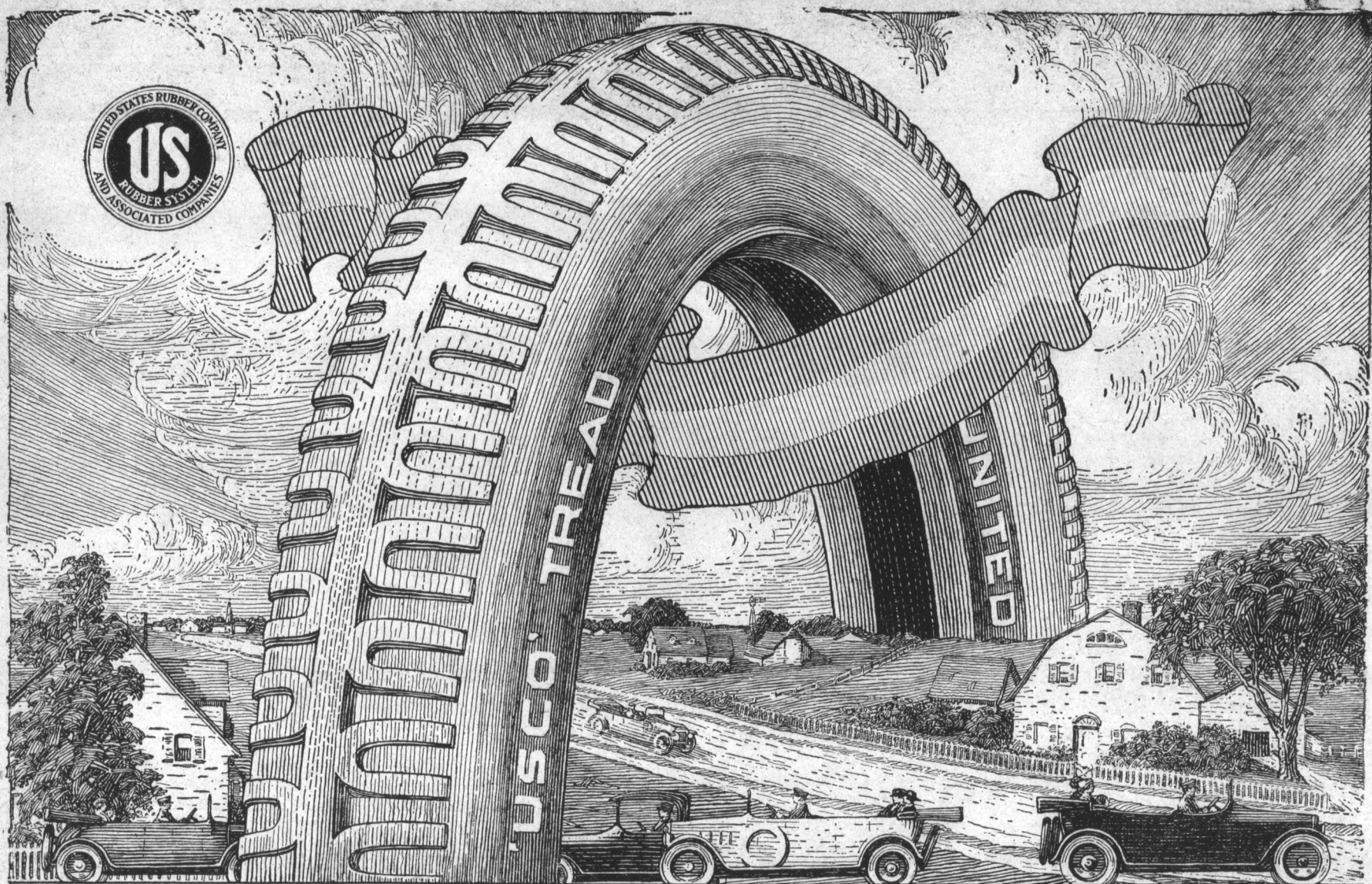
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Registered Percherons. Big black stud colt coming 3 sound and sure. Big boned ruggedilly 2 past, bred by M. A. C. Also pair of mares 4 and 5 years old. Come and see them.

JNO. C. BUTLER, Portland, Mich. Bell Phone.

REGISTERED PERCHERON Mares and Stallions priced to sell. Inspection invited. L. C. HUNT, EATON RAPIDS, MICH.

Stock Ads. Continued on Page 555



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