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FOR years experiment stations and agricultural colleges have recommended that potatoes be sprayed. Experiments running over long periods have been run in New York and in Vermont. The net result of these years of experimentation is that spraying is a profitable farm operation. The figures that reinforce this conclusion are interesting. A summary of spraying experiments in Vermont showed an average gain of 105 bushels to the acre in sprayed over unsprayed rows. In not a single year did the yield from unsprayed rows equal that from the sprayed. In New York experiments, the ten-year average showed a gain of sixty-nine bushels per acre from three sprayings and a gain of ninety-seven and a half bushels per acre from five to seven sprayings. These results, covering as they do, long periods of time, show the results from spraying are consistent, and that in many cases the gain is enormous. Nor are the figures to prove the case for Michigan lacking, although the experiments have not continued year after year. These experiments fall into two groups; experiments performed at the experiment station or under the direct supervision of the experiment station. Of the data at hand the following figures are important. In 1905 on the College Farm, a field sprayed six times with Bordeaux mixture showed a gain of 39.5 bushels over the unsprayed check. In 1911 on the College Farm a field was sprayed with Bordeaux mixture four times, while a part was left unsprayed, as a check. The unsprayed portion yielded eighty bushels per acre, and the sprayed portion 119 bushels per acre. In 1915 a field of potatoes in Kalamazoo county was sprayed and a strip was left in the center unsprayed as a check. Nineteen hundred and fifteen, as will be remembered, was a year when late blight was severe. The unsprayed strip blighted to the ground while the sprayed remained green. The yield from the unsprayed was 130 bushels of low-grade rotted stock, from the sprayed was 260 bushels of first-class stock. The story of this spraying experiment was written in the Michigan Farmer of December 4, 1915, by Mr. C. W. Waid, and the picture which accompanies this article is reproduced from that write-up. Hundreds of passers-by drove to this field and saw at a glance the point of the teachings of the Agricultural College for a decade or more.

Thorough Spraying Essential.
An interesting thing about the potato spraying is that the more thoroughly it is done, and the more frequent the sprayings, the better the disease control, and

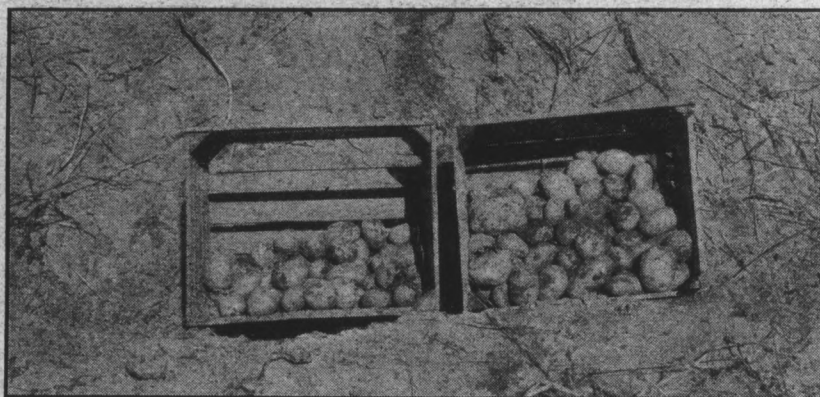
Spraying Potatoes

By PROF. G. H. COONS

the greater the gain. Along with the increased yield from disease control, comes the remarkable fact that the Bordeaux mixture exerts a stimulating effect upon the foliage. To what this effect is due is not clear, but the fact remains that tops sprayed often with Bordeaux mixture are greener and produce material for larger crops than the unsprayed, even in years when diseases are not serious. From this it will be seen that there is a very good reason for the recommendation to spray every year, and it makes it very manifest that the spraying directed against these diseases is more than a protec-

understood, copper-sulphate stimulates the leaves and prevents the burning in hot, dry weather.

In some counties spraying with Paris green or lead arsenate to control bugs is regularly practiced, and after the hard experience of last year, there is no question but the farmers will fight bugs next year. But such spraying, while heartily to be recommended, is only a starter and is not the sort of treatment under discussion here. The purpose of this article is to discuss the fact that although the value of spraying has been demonstrated, yet it is not at all a common practice.



Product of Ten Hills Each from Unsprayed and Sprayed Rows.

tion, since it is a beneficial crop practice. It may well be called a form of crop insurance, where the premiums are all dividends.

But this article does not merely aim to tell again the facts that are now well known about the effect of Bordeaux spray. It will be assumed that the case is now proved that the spray, made at home, from blue-stone and lime, will prevent injury from the fungous diseases, late and early blight. It will do more; it will keep the fields green when unsprayed fields parch and burn from that weather-scorch known as tip burn. In some way, not fully

Michigan is not alone in the neglect of this beneficial crop treatment. It is noticed that when late blight sweeps Michigan and destroys half the Michigan crop, it destroys an equal amount of the New York and Wisconsin crop. The crops in those states are as unprotected as the Michigan crop, and this in spite of years of extension work and demonstration.

Gambling with Nature.

The cause of such a condition is not any perverse state of mind on the part of the farmers, but comes about wholly from the working out of plain everyday business principles. As potatoes

are commonly grown in the average field of these three great potato states, in large acreages giving a comparatively low yield per acre, the spraying of potatoes is not profitable as a year after year process. The late blight coming as it does about one year in five, allows the farmer to get into the state of mind such that he will "take a chance." Then, too, in "blight" years, although the aggregate loss to the state runs into the millions, the extra price which comes about due to crop shortage reimburses, to some extent, the man with a half crop. If he is at all long-headed, he will wish that he had not let so large a part of the crop rot in the year when prices were good. It will be seen that the consumer in the long run pays the board bill of the fungus.

The reason why spraying does not pay the Michigan farmer has been indicated. In our large potato counties we find a large acreage planted, the stock is planted in a hap-hazard way, no seed treatment or seed selection is practiced, cultivation is slighted and as might be expected a crop of from 100 to 125 bushels to the acre is harvested. The farmer does not look upon the potato crop as the money crop toward which all the forces of a four-year rotation are directed, but he looks upon it as merely a regularly recurring staple crop yielding a low return per acre. The large acreage is necessary if he is to get any sizable amount of money from the potato crop.

Such a system of growing potatoes does not lend itself to crop improvement. Such growers resent any suggestions as to better practices. The truth is that with such a growing system many of the recommendations are futile and of little practical value.

Spraying a Farm Management Problem.

It will be seen then that the problem of potato spraying can not be touched until farm management methods in the potato counties change. I believe that an analysis of such a method of farming will show that the growing of a low-grade crop of low yield, which commands only a low-grade price, is as truly unprofitable as the raising of scrub cattle in a scrub sort of way. Jason Woodman, in an address before the State Potato Association said: "We must grow more potatoes and yet we must grow less potatoes! We must grow more per acre on fewer acres." This is indeed, the kernel of the whole matter. As soon as a man begins to grow more than the average crop of potatoes—as soon as his yield per acre reaches 175 to 200 bushels an acre, then by spraying (Con. on page 20).



Unsprayed Rows Attacked by Blight in the Potato Field of J. C. Ridpath, Kalamazoo County, in 1915.

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DETROIT, JULY 14, 1917



CURRENT COMMENT.

That Michigan farmers have risen to the occasion and in increased crop acreage are "doing their bit" in a most commendable manner is shown by advance information on the reports of state crop correspondents regarding the acreage planted to staple crops this year. These reports show nearly three-quarters of a million acres in increased planting this year as compared with 1916. In order of importance in increased acreage of principal cash crops, beans and potatoes lead the list of big increases. The bean acreage of the state is estimated at 540,472 acres, an increase of 96,885 acres as compared with last year. Potatoes are estimated at 437,731 acres, as compared with 361,599 acres planted last year. The estimated acreage of sugar beets this year is 105,545 acres, an increase of 18,784 acres over last year. Perhaps still more important to the state's agriculture and to an increased food supply is the increase in the acreage of cereal crops planted this spring. The estimated acreage in corn is 2,277,832 acres, an increase over last year of 290,678 acres, while the estimated acreage of oats is 1,908,128 acres, an increase of 185,205 acres. The acreage in barley and peas has also been substantially increased as compared with last year.

These increases are most reassuring, making up many times over for the slightly decreased acreages of fall grains sown last year on account of the unfavorable seasonal conditions. When it is considered that the farmers of the state have so well met the food shortage emergency under the handicap of a late and unfavorable spring and an unprecedented shortage of labor, the very substantial increase in food crops planted is a matter for sincere congratulation to the farmers of the state and to the country alike. With anything like favorable weather conditions for the balance of the season the farmers of Michigan will add immensely to the available food supply of the world and to their own resources for future production, since there is a practical certainty that compensatory prices will prevail for all staple food

products which may be produced from this greatly increased acreage. This will make possible the better equipment of the farms and farm homes of the state, the better to enable our farmers to meet future emergencies in the way of still further increased food production, which are more than likely to be encountered before the great world war in which we are engaged is over and the peoples of the warring countries again settled down to peaceful pursuits.

Buy Fertilizers Early.

It is more than ordinarily important that the farmers of the country have at hand the needed supply of fertilizers in season for application to wheat and other fall sown grain this year. If this is to be accomplished, every farmer who expects to use fertilizer this fall should order same at once. The inadequacy of our transportation facilities has been so fully demonstrated during the past year as to require no further argument at this time. With the added burden of transporting troops and war supplies which will be thrown upon the railroads within a short time the car shortage and congestion of freight will be unavoidably increased. The early placing of orders for fertilizers will enable manufacturers to anticipate the farmers' needs as to tonnage and to so plan distribution as to fully utilize the tonnage of cars employed in shipping the goods. This point is emphasized in a bulletin recently issued by the Council of National Defense in which it is stated that the American Railway Association has found by investigation that only about forty-seven per cent of the full capacity of cars now used in the transportation of fertilizers is being utilized due to the average low tonnage of carlot shipments. What this amounts to in the aggregate is shown by the report that figures for last March show that in the movement of fertilizers on one railroad, space to the amount of 1,532 cars was lost by minimum or small loadings.

In this connection the Co-operative Committee of Railroad Transportation which handles the freight equipment of the United States under the direction of the Council of National Defense states that it is a grave question whether the traffic of the United States can be moved by the railroads unless every freight car is loaded to its full cubical capacity, or to 110 per cent of its marked capacity. This being true it is obvious that the public good will require that the freight car equipment be so assigned that shippers move their commodities by loading cars to their full capacity. It is obvious that the shipment of fertilizers in this manner will be greatly facilitated by promptness in ordering same by the farmers of the country. Orders for all fertilizers needed this fall should be placed at once through the regular channels as a means of facilitating the distribution of this highly important commodity. Patriotism as well as profit should prompt an early and general response to this official plea.

HAPPENINGS OF THE WEEK.

Foreign.

A sudden attack was made on London last week by the largest German air fleet that has yet visited the English shores. Great damage was wrought to the heart of the city, the details of the attack and the number of deaths caused having not been made known. Residents of London are insisting upon early reprisals by the English forces. It is announced that the new Hungarian premier will dissolve parliament, inasmuch as the tactics of the followers of former Premier Tisza have made it impossible to enact legislation.

The Chinese monarchy was short lived. The Royalist troops were badly beaten and the republic is in power, with Vice-President Feng Kuo Chang as acting ruler. German influence is supposed to have been back of the attempt to establish a monarchy again.

National.

All Germans formerly connected with the German embassy or with any of

the consulates in America, have been notified by the state department that their presence in this country is undesirable. There is ground to believe that some of these persons are connected with the spy system which is keeping the German government informed on our military movements.

Investigations are being made into the recent race riot at East St. Louis, in which scores of negroes were killed. The reproach brought upon the city and state by this outrage is the result of labor competition. Large numbers of negroes had been migrating from the south to take advantage of the better wages offered in the northern city. White laborers revolted against this movement as it threatened to reduce wages by reason of the larger number of available men.

The United States government has loaned France another \$100,000,000, which makes \$310,000,000 of American money that has gone to that country, and to the allies \$1,303,000,000.

President Wilson has put a world embargo on necessities, effective July 15. This embargo will affect all nations. After home needs are supplied the allied nations will be furnished and neutral nations will be provided only after it has been accurately determined what their needs are.

After lying for more than a half century 180 feet under water in Lake Huron, the steamer Pewabic has been reached by divers. In her hold lies nearly 300 tons of copper. This record in deep-sea salvage work was accomplished by a special armored diving suit and makes possible the recovery of millions of dollars worth of salvage hitherto unavailable.

President Wilson has thrown his personal weight against the attempt of congress to exclude bids of members of the national defense committee in the manufacture of war munitions. These committees have largely been selected from large producing concerns because of the business experience and the President feels that any action such as is contemplated, would seriously disrupt the fighting machinery of the country.

MICHIGAN CROP REPORT.

Wheat.—The average estimated yield of wheat in the state is 14.76 in the southern counties 15, in the central counties 13, in the northern counties 16 and in the upper peninsula 22 bushels per acre. The estimated total number of bushels of wheat marketed and used by farmers in the 11 months, August-June, is 11,750,000.

Rye.—The average estimated yield of rye in the state is 14.38, in the southern counties 15, in the central counties 13, in the northern counties 14 and in the upper peninsula 21 bushels per acre.

Corn.—The condition of corn in the state, southern and northern counties is 70, in the central counties 67 and in the upper peninsula 85. One year ago the condition of corn in state was 68.

Buckwheat.—The acreage of buckwheat sown or to be sown as compared with last year is 97 in the state, 96 in the southern counties, 98 in the central counties, 99 in the northern counties and 106 in the upper peninsula.

Beans.—The acreage of beans planted or to be planted as compared with last year is 123 in the state, 122 in the southern counties, 118 in the central counties, 129 in the northern counties and 121 in the upper peninsula. The condition of beans compared with an average is 85 in the state, 88 in the southern counties, 79 in the central counties, 86 in the northern counties and 95 in the upper peninsula.

Potatoes.—The condition of potatoes in the state is 91, in the southern counties and upper peninsula 93, in the central counties 86 and in the northern counties 89. The condition one year ago was 87 in the state, 88 in the southern counties, 82 in the central counties, 90 in the northern counties, and 86 in the upper peninsula.

Sugar Beets.—The condition of sugar beets is 89 in the state, 91 in the southern and northern counties, 85 in the central counties and 103 in the upper peninsula. One year ago the condition was 84 in the state and upper peninsula, 87 in the southern counties, 78 in the central counties and 90 in the northern counties.

Clover.—The condition of clover as compared with an average is 98 in the state and central counties, 99 in the southern counties, 97 in the northern counties and 101 in the upper peninsula.

Hay and Forage.—The acreage of hay and forage that will be harvested as compared with last year is 91 in the state and southern counties, 88 in the central counties, 93 in the northern counties and 102 in the upper peninsula.

Peas.—The acreage of peas sown as compared with last year is 91 in the state and central counties, 93 in the southern counties, 88 in the northern counties and 97 in the upper peninsula.

Cucumbers.—The acreage of cucumbers planted so far as reported is 15,299 in the state, 8,171 in the southern counties, 4,083 in the central counties, 2,860 in the northern counties and 185 in the upper peninsula.

Crop Acreage.—The following table shows for the state the estimated acreage of the principal farm crops, fruit excepted, for the year 1917:

Wheat	718,619
Rye	408,080
Corn	2,277,832
Oats	1,908,128
Barley	85,623
Buckwheat	61,509
Beans	540,472
Peas	63,201
Potatoes	437,731
Sugar beets	105,545
Hay and forage	2,287,496

Fruit.—The following table of percentage gives the averages in regard to fruit in the state:

	Per cent.
Apples—Prospect for average crop	53
Peaches—Prospect for av. crop	11
Pears—Prospect for average crop	62
Plums—Prospect for average crop	53
Orchards—That are cultivated	39
Trees—Condition of last spring's setting	68
Grapes—Prospect for average crop	78
Raspberries and Blackberries—Prospect for average crop	82

MICHIGAN FAIRS FOR 1917.

The following is a complete list of fairs for 1917 as compiled by the Secretary of the Michigan Association of Fairs, with the date of each.

- Ionia Fair, Ionia, Aug. 15-18.
- Shiawassee Co., Owosso, Aug. 21-24.
- Tuscola Co., Huron and Sanilac Dist. Fair, Cass City, Aug. 21-24.
- Caro Fair, Caro, Aug. 27-31.
- Gratiot Co., Ithaca, Aug. 28-31.
- Livingston Co., Howell, Aug. 28-31.
- Michigan State Fair, Detroit, Aug. 31-Sept. 9.
- Barry Co., Hastings, Sept. 4-7.
- Greenville Fair, Greenville, Sept. 4-7.
- Huron Co., Bad Axe, Sept. 4-7.
- Midland Co., Midland, Sept. 4-7.
- Sanilac Co., Sandusky, Sept. 4-7.
- Emmet Co., Petoskey, Sept. 11-14.
- Gladwin Co., Gladwin, Sept. 11-14.
- Gogebic Co., Ironwood, Sept. 12-14.
- Isabella Co., Mt. Pleasant, Sept. 11-15.
- Jackson Co., Jackson, Sept. 10-15.
- Northeastern Michigan Fair, Bay City, Sept. 10-15.
- Otsego Co., Otis, Sept. 14-15.
- Alger Co., Chatham, Sept. 20-22.
- Arenac Co., Standish, Sept. 18-21.
- Calhoun Co., Marshall, Sept. 17-21.
- Clinton Co., St. Johns, Sept. 18-21.
- Cloverland Fair, Stephenson, Sept. 18-21.
- Croswell Fair, Croswell, Sept. 18-21.
- Dickinson Co., Norway, Sept. 19-22.
- Flint River Valley, Burt, Sept. 18-20.
- Grange Fair, Camden, Sept. 18-21.
- Lenawee Co., Adrian, Sept. 17-21.
- Manistee Co., Onkama, Sept. 18-21.
- Milford Fair, Milford, Sept. 18-21.
- Northern District, Cadillac, Sept. 18-21.
- Oceana Co., Hart, Sept. 18-21.
- Seward Pomona, Baraga, Sept. 20-22.
- West Michigan State Fair, Grand Rapids, Sept. 17-21.
- Alcona Co., Harrisville, Sept. 26-28.
- Allegan Co., Allegan, Sept. 25-28.
- Alpena Co., Alpena, Sept. 25-28.
- Antrim Co., Bellaire, Sept. 25-28.
- Charlevoix Co., East Jordan, Sept. 25-28.
- Clare Co., Harrison, Sept. 26-28.
- Copper Country Fair, Houghton, Sept. 25-28.
- Delta Co., Escanaba, Sept. 25-28.
- Eaton Co., Charlotte, Sept. 25-28.
- Grand Traverse Region Fair, Traverse City, Sept. 24-28.
- Farmers' Fair, Big Rapids, Sept. 25-28.
- Hillsdale Co., Hillsdale, Sept. 24-29.
- Iosco Co., Tawas City, Sept. 26-28.
- Marquette Co., Marquette, Sept. 25-29.
- North Branch Fair, North Branch, Sept. 26-28.
- Ottawa and West Kent, Berlin, Sept. 25-28.
- Otsego Co., Gaylord, Sept. 25-27.
- Saginaw Co., Saginaw, Sept. 25-28.
- Schoolcraft Co., Manistique, Sept. 26-28.
- South Ottawa and West Allegan, Holland, Sept. 25-28.
- St. Joseph County Grange, Centreville, Sept. 25-28.
- Cheboygan Co., Wolverine, Oct. 2-5.
- Fowlerville Fair, Fowlerville, Oct. 2-5.
- Fruit Belt Fair, Empire, Oct. 3-6.
- Imlay City Fair, Imlay City, Oct. 2-5.
- Van Buren Co., Hartford, Oct. 2-5.
- Armada Fair, Armada, Oct. 10-12.
- Brevort Fair, Allenville, Oct. 11-12.
- Ogemaw Co., West Branch, Oct. 26-28.

Take Care of the Wheat Crop

By A. L. BIBBINS
State Farm Labor Specialist

WE are told that our nation's wheat supply is some several millions of bushels short. No matter what the shortage is we dare not lose another bushel.

Of course, this shortage might occur at any time, for there are a great many risks in producing this crop. Pitfalls are continually appearing and many of them are unavoidable. The alternate freezing and thawing, the forming of ice-sheets, winds, droughts, etc., are freaks of nature which are largely uncontrollable by man, but, however, have been decidedly disastrous to many past as well as the present crop. Although success of the wheat crop is constantly imperiled, the greatest danger is at harvest time; however, man is able to control, to a large extent, the dangers met with at this time. It is important this year, above all others, that we carefully safeguard against all means of decreasing our yield.

Estimated Annual Loss.

Farmers, county agents and crop experts have been interviewed and agree that the average loss of wheat at harvest time may be safely estimated to be one bushel per acre. If this is true Michigan will lose about 800,000 bushels of the world's most important food. Even though the loss is but one-half bushel per acre we will lose approximately 80,000 barrels of flour, which when made into bread would furnish about 24,000,000 loaves to the already hungry world. Not only would the world in general suffer from this waste but the farmers themselves will lose wealth equal to about a million dollars, a sum sufficient to defray the running expenses of their agricultural college for two years.

Conditions Causing the Loss.

1. Delay in cutting; grain should be cut when the heads have turned yellow but while the stems are still slightly green and the kernels in the hard dough stage, i. e., when soft enough to be dented with the thumb nail and hard enough not to be crushed between the fingers. If the grain is allowed to stand beyond the full period of maturity a slight decrease in weight occurs, due to the fact that the plant continues to respire, giving off carbon-dioxide without taking in food to build up the plant tissue. Also there is a greater loss due to shattering, winds, rain, etc.
2. Delay in shocking and stacking.
3. Inferior shocking and stacking.
4. Failure to tie up loose and broken bundles. A careful man will always do this and thus a great saving is made.
5. Inferior work with the binder. Binder in poor condition. Careless driving.
6. Failure to muzzle inside horse.
7. Failure to use the scythe around stumps, trees, stones, and along fence rows.
8. Failure to rake. A great loss is often met with because of neglecting this operation.
9. Failure to open shocks or to re-shock when necessary. In exercising good judgment a great quantity of wheat can be saved which otherwise would be musty and soft due to weathering.

Preventive.

There is one preventive for all these losses and that is ample labor in our wheat fields at harvest time. As has already been stated the risks are many and great at this period. To properly guard against loss each farmer should calculate the amount of labor necessary to handle the situation and obtain it either through his own resources or by utilizing the Farm Labor Bureau. Michigan cannot afford to allow a bushel of her wheat crop to needlessly go to waste. The supply is too short and the price too large.

As an aid to the farmer the following table is offered. It is a result of investigations made by the United States Department of Agriculture and shows the amount of work done in 10.33 hours in the grain field.

Cutting with Binder.

Five-foot cut, 3 horses..... 8.35 acres
Six-foot cut, 3 horses..... 9.90 acres
Seven-foot cut, 4 horses..... 13.80 acres

Shocking Grain—One Man.

Yield 1 to 20 bu. per acre.. 10.09 acres
Yield 21 to 40 bu. per acre.. 8.73 acres
Yield 41 to 60 bu. per acre.. 8.46 acres
Yield over 60 bu. per acre.. 7.36 acres

Stacking Grain from the Shock.

No. men.	No. horses.	Stacking in field.	Stacking at farms.
2	2	6.40	5.30
3	2	6.70	5.80
3	4	9.60	8.40
4	4	12.30	10.00
4	6	15.60	13.00
5	4	12.60	11.00
5	6	15.90	14.00
6	4	15.00	13.00
6	6	18.20	16.00
6	8	21.50	18.90

The United States Department figures that in general the daily cut per man is from 2.75 to 3.5 acres per day if grain is stacked in the field, and 2.5 to three if it is stacked in the barn.

It will require an enormous amount of labor to handle this crop. Many farmers have already made bids for help. Others have arranged with their neighbors. Anyone who is not well provided should immediately notify their county agent. The food preparedness committee now has about 12,000 experienced farm laborers awaiting the call to aid during the grain harvest. Let us utilize them and lessen this annual 400,000 to 800,000 bushels loss as much as possible.

FARM NOTES.

Seeding Thin Sandy Land to Clover.

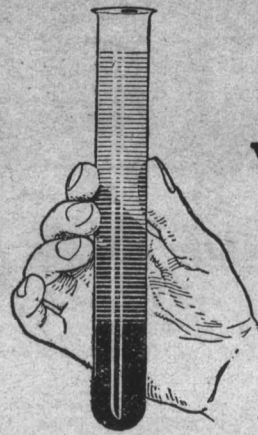
We have four acres of light sandy soil which I would like to get seeded. Being so sandy it is hard to get a catch of clover. It had a little clover sod plowed under several years ago, but since it has gotten run down. I tried to seed it to clover and timothy but very little came, so I plowed it again and sowed to rye and manured it in winter and spring, and planted corn. It was so dry and hot last summer that the corn did not get big, so I cut it early for fodder corn and worked up the ground and sowed rye and intended to plow it under for corn after manuring this spring, but as the rye looks good I let it stand. As soon as the rye is off I would like to plow it with a three-furrow gang plow as there are quite a few sand burrs in this field. What kind of grass could I sow on this ground? Would sweet clover be good? I could manure it next winter and plow under for oats and seed it then.

Oakland Co. SUBSCRIBER.

Since this land is now growing a crop of rye and you desire to plow same after the rye is harvested in order to eradicate sand burrs, a catch crop which will add humus to the soil would perhaps be the most profitable to sow this year. There would be nothing better for this purpose than rye and vetch, the same to be plowed down next spring as a green manure crop. It would furnish some pasture in the fall and spring for use for this purpose, or could be cut early as a hay crop if so desired, although this thin sandy soil would be greatly improved by plowing the entire growth down.

Vetch does not always make a good growth on thin soil where it has not been grown before, but is the best legume which could be sown in mid-summer. If sown in August, sowing ten to fifteen pounds of vetch with a bushel of rye per acre, a good green manure crop could be produced.

Sweet clover would not be very likely to make a good stand on this soil, since it is probably in an acid condition, which doubtless accounts in some measure for the failure to get a good seeding of clover on same. If a liberal application of lime or marl is made,



And this was called oil!

A chemist's report on a sample taken from a crank-case

An operator of motor trucks in Rochester, N. Y., who was getting irritating results from his lubrication, furnished us with a sample of the used oil from the crank-case.

It proved to be 72% gasoline.

How did the gasoline get there?

As you know, there is a clearance between piston rings and pistons. The oil used on this car, being of wrong body and character, had failed to seal this clearance. Gasoline had been forced down past the piston rings with each compression stroke. The gasoline had then been churned into the oil until there was actually more gasoline than oil in the crank-case.

72% gasoline in crank-case oil is of course unusual.

But the incident brings out pointedly a very common condition.

Oil that furnishes

a poor piston-ring seal always allows the escape of gasoline into the crank-case.

And it takes very little gasoline in the crank-case to seriously impair the oil's lubricating efficiency.

Motorists repeatedly report that Gargoyle Mobiloils, used as specified in our Chart, cut their usual gasoline consumption from 10 to 20%. Why?

Because when the proper grade of Gargoyle Mobiloil is used, the combustion chambers are sealed gas-tight and power-tight. Oil of correct body keeps the gas in the combustion chambers where it belongs. It keeps the gas out of the crank-case where it does not belong.

Write for new 56-page booklet containing complete discussion of your lubrication problems, list of troubles with remedies and complete Charts of Recommendations for Automobiles, Motorcycles, Tractors and Marine Engines.

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Explanation:—The four grades of Gargoyle Mobiloils, for engine lubrication, purified to remove free carbon, are:

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Gargoyle Mobiloil "E"
Gargoyle Mobiloil "Arctic"

In the Chart below, the letter opposite the car indicates the grade of Gargoyle Mobiloil that should be used. For example, "A" means Gargoyle Mobiloil "A," "Arc" means Gargoyle Mobiloil "Arctic," etc. The recommendations cover all models of both pleasure and commercial vehicles unless otherwise noted.

Model of	1917	1916	1915	1914	1913
CARS	Summer	Winter	Summer	Winter	Summer
Abbott-Detroit.....	Arc	Arc	Arc	Arc	Arc
Allen.....	Arc	Arc	Arc	Arc	Arc
Apperson.....	Arc	Arc	Arc	Arc	Arc
Auburn (4 cyl).....	Arc	Arc	Arc	Arc	Arc
Avery.....	Arc	Arc	Arc	Arc	Arc
Briscoe.....	Arc	Arc	Arc	Arc	Arc
Buick.....	Arc	Arc	Arc	Arc	Arc
Cadillac.....	Arc	Arc	Arc	Arc	Arc
Case.....	Arc	Arc	Arc	Arc	Arc
Chalmers.....	Arc	Arc	Arc	Arc	Arc
Chandler Six.....	Arc	Arc	Arc	Arc	Arc
Chevrolet.....	Arc	Arc	Arc	Arc	Arc
Cole.....	Arc	Arc	Arc	Arc	Arc
Dart.....	Arc	Arc	Arc	Arc	Arc
Detroit.....	Arc	Arc	Arc	Arc	Arc
Dodge.....	Arc	Arc	Arc	Arc	Arc
Dort.....	Arc	Arc	Arc	Arc	Arc
Empire.....	Arc	Arc	Arc	Arc	Arc
Federal.....	Arc	Arc	Arc	Arc	Arc
Ford.....	Arc	Arc	Arc	Arc	Arc
Grant.....	Arc	Arc	Arc	Arc	Arc
Haynes.....	Arc	Arc	Arc	Arc	Arc
Hudson.....	Arc	Arc	Arc	Arc	Arc
Hupmobile.....	Arc	Arc	Arc	Arc	Arc
I.H.C. (air).....	Arc	Arc	Arc	Arc	Arc
I.H.C. (water) (4 cycle).....	Arc	Arc	Arc	Arc	Arc
Interstate.....	Arc	Arc	Arc	Arc	Arc
Jeffery.....	Arc	Arc	Arc	Arc	Arc
King.....	Arc	Arc	Arc	Arc	Arc
Com'l.....	Arc	Arc	Arc	Arc	Arc

Model of	1917	1916	1915	1914	1913
CARS	Summer	Winter	Summer	Winter	Summer
Kissel Kar.....	Arc	Arc	Arc	Arc	Arc
Com'l.....	Arc	Arc	Arc	Arc	Arc
Lexington.....	Arc	Arc	Arc	Arc	Arc
Locomobile.....	Arc	Arc	Arc	Arc	Arc
Marmont.....	Arc	Arc	Arc	Arc	Arc
Maxwell.....	Arc	Arc	Arc	Arc	Arc
Mitchell.....	Arc	Arc	Arc	Arc	Arc
Moline.....	Arc	Arc	Arc	Arc	Arc
Monroe.....	Arc	Arc	Arc	Arc	Arc
Moon (4 cyl).....	Arc	Arc	Arc	Arc	Arc
National.....	Arc	Arc	Arc	Arc	Arc
Oakland.....	Arc	Arc	Arc	Arc	Arc
Oldsmobile.....	Arc	Arc	Arc	Arc	Arc
Overland.....	Arc	Arc	Arc	Arc	Arc
Packard.....	Arc	Arc	Arc	Arc	Arc
Com'l.....	Arc	Arc	Arc	Arc	Arc
Paige.....	Arc	Arc	Arc	Arc	Arc
Com'l.....	Arc	Arc	Arc	Arc	Arc
Pathfinder.....	Arc	Arc	Arc	Arc	Arc
Peerless.....	Arc	Arc	Arc	Arc	Arc
Pierce Arrow.....	Arc	Arc	Arc	Arc	Arc
Premier.....	Arc	Arc	Arc	Arc	Arc
Regal.....	Arc	Arc	Arc	Arc	Arc
Reo.....	Arc	Arc	Arc	Arc	Arc
Saxon.....	Arc	Arc	Arc	Arc	Arc
Stearns-Knight.....	Arc	Arc	Arc	Arc	Arc
Studebaker.....	Arc	Arc	Arc	Arc	Arc
Valley.....	Arc	Arc	Arc	Arc	Arc
Westcott.....	Arc	Arc	Arc	Arc	Arc
White.....	Arc	Arc	Arc	Arc	Arc
Willys-Knight.....	Arc	Arc	Arc	Arc	Arc
Willys Six.....	Arc	Arc	Arc	Arc	Arc
Winton.....	Arc	Arc	Arc	Arc	Arc

YOUR TRACTOR

also may be lubricated efficiently with Gargoyle Mobiloils. On request we will mail you a separate Chart specifying the correct grade for each make and model of tractor.

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Incorporated

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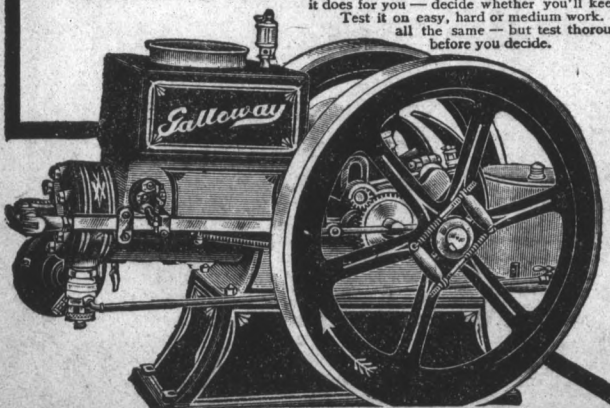
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But you don't have to take my word, or anybody's word. You can try my Masterpiece Six on your own farm for a free power test if you want to. Let the engine—by the work it does for you—decide whether you'll keep it. Test it on easy, hard or medium work. It's all the same—but test thoroughly before you decide.



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it will greatly improve the chance of getting a good crop of clover the next time the field is seeded. Then, too, sweet clover requires a good firm seed bed for best results, which would be difficult to secure after plowing this rye stubble.

If this land could be limed after plowing the rye stubble down, and the growth of rye and vetch plowed under with an application of manure if available, and planted to some cultivated crop, as potatoes, next year, the sand burrs could then be more completely eradicated, and the land could be successfully seeded to clover with a thin seeding of oats the following season.

A great deal of the older and more open soils of the state have become acid through the leaching out of their lime content, and require an application of lime before profitable crops of clover can be grown upon them, and as good crops of clover are essential to maximum grain or cash crops in the rotation, the quicker such soil can be gotten into condition to grow clover successfully, the sooner will its cultivation become profitable.

Eradicating Canada Thistles.

I have a clay farm which is being well worked but Canada thistles are still increasing. Is there any way to prevent this or is there any way to kill them?

Kent Co.

D. J. O.

The very best way, in the writer's opinion, to eradicate Canada thistles from good strong land, is by seeding same to alfalfa in the crop rotation, using cultural methods which will insure success with this crop. Thistles cannot endure the frequent cutting of the alfalfa, and will be discouraged by this treatment. Good cultural methods, together with the cutting of the thistles when in bloom, will also tend toward their eradication. Summer fallowing in a manner to prevent any growth above ground will starve out the plants. They can also be eradicated by thorough culture of hoed crops.

Eradicating Quack Grass.

I have a lot of quack grass on my farm; each year it seems to spread more. What is the best way to kill it?

Tuscola Co.

D. R. E.

Many expedients have been resorted to for the eradication of quack grass, with varying success. None equals the old-fashioned method of absolutely clean culture for a sufficient length of time to starve the roots by killing all growth as it appears. This can be accomplished most cheaply by summer fallowing, but it is also possible through the use of hoed crops, particularly root crops, for which the ground is plowed in the early spring and which are not planted until comparatively late in the season.

Other methods of eradicating quack grass include the growing of a heavy crop with the idea of smothering same out. Sorghum is used for this purpose, and hemp is also grown to some extent for this purpose in localities where there is a market for same. A double plowing of the land, first shallow and then deep after the roots have again started has also been used with some success. Only the most thorough methods will succeed in eradicating this grass or any similar weed which spreads through underground root stalks.

POTATO SPRAYING.

(Continued from first page.)

he can get results which will equal those of that which are reported in the bulletins. The potato is a plant extremely responsive to its surroundings. It must have a rich soil, a clover sod, well manured, or fertilized is almost imperative. The stock planted must be carefully sorted and treated. Cultivation must be thorough and frequent, beginning before the crop is above the ground and continuing so long as the horse can get through the vines. With vines under such conditions, the use of Bordeaux spray will work wonders.

The problem of spraying potatoes then resolves itself into a farm management problem. Raise a high-grade, high-yielding crop and spraying becomes a necessary adjunct.

Extraordinary Conditions.

What has been written deals with spraying in the ordinary year and attempts to give the point of view of the average farmer. Conditions this year are extraordinary. Potatoes are planted this year in part as a response to a patriotic appeal. The seed put into the ground is worth more than average net return from potatoes in the ordinary year. It will be seen that the potato crop this year, from the value of the seed tubers alone takes on all the attributes of a "money crop." The farmer this year has put so much into the crop that he must prepare to handle it in the best possible way. Many have planted, estimating the price next year at fifty cents a bushel. It is evident that a yield of 100 bushels an acre will not pay for the seed. Even at the more conservative estimate that the price of potatoes will be \$1.00 a bushel, there will not be a big return considering the risks undertaken.

The dictates of good business judgment require that the potato crop this year receive a treatment commensurate with the investment. This is the occasion for starting the culture of potatoes under the conditions advised in the first part of this article. The returns to the farmer this year if he will bend every energy to produce a 200-bushel yield, at least, will be extremely gratifying.

Seasonal Pointers.

Late blight as has been seen from a study of epidemics in the last twenty-five years has been found to come, with late potatoes, when the first half of the growing season is cold and wet. For most areas in Michigan at the time this article is written, (June 20), it is impossible to predict whether we are to have a late blight epidemic or not. It will be the part of good judgment to plan to spray potatoes this year as a form of crop insurance.

The cost of spraying this year will not be prohibitive. Copper-sulphate has dropped in price and is now quoted on the wholesale market at ten cents a pound. It will probably cost no more than \$7.00 to \$10 to spray an acre of potatoes five times—that is, to protect it surely from the late blight. If the soil and culture is right, a gain in yield of only ten bushels to the acre will pay this work, while the gain that may reasonably be expected will pay big. It is doubtful if anything one can do on the farm will pay so well this year as the proper care of the potato field.

Before the end of July, the experiment station pathologists will be able to say whether late blight is threatening or not. If the weather is right to start the late blight fungus there will be issued press warnings to urge spraying without fail. These warnings will be of but little use unless a spray rig equipment of some sort or other is at hand. The better the machine the greater the efficiency in control, but even a knapsack sprayer will save a crop. Every farm should be equipped with a general utility barrel sprayer. This can readily be adapted to spray potatoes.

In writing this article, I have had in mind conditions as they usually present themselves and conditions in this year of stress. The answer to the question, "Shall we spray potatoes this year?" can be as brief as the preamble has been long. It is certainly the part of good business to insure a crop whose seed has cost so much, and it will surely pay to get as big a yield as possible in this year of high prices.

Let us, therefore, get the spray rig ready, lay in a bountiful supply of copper sulphate and prepare to spray a well cultivated, vigorous potato field and start a new era in the Michigan potato business.

Striped Cucumber Beetle and the Wilt

THE striped cucumber beetle is the most serious pest the melon grower has to contend with. Owing to the importance of this insect to the melon grower, a brief summary of its life history is here given. According to Sanderson in his book on "Insect Pests of Farm, Garden and Orchard," the adult striped cucumber beetles spend the winter in the ground near where they have been feeding the previous fall. They emerge before melon planting time and feed on almost any kind of plant until cucurbits (melons, cucumbers, squashes, etc.), appear. Unless driven away from the cucurbits by the application of repellants, they prefer this class of plants when available. After feeding on the cucurbits for a few days, the beetles pair and the females begin to deposit eggs. The eggs are deposited singly and are merely dropped in crevices of the soil or in the openings around the stems of the plants. Each female lays about 100 eggs during a period of about a month and they hatch in about eight days if temperature is at summer heat. The larva is a slender, white, worm-like grub, 3.10 inches in length, with dark brown head. The larvae bore into the roots, often tunneling into the base of the stem and sometimes mine into melons lying on damp soil. Rarely does injury by larvae become noticeable. The larvae become full grown in about a month and then form an earthen cell below the surface of the soil where it is transformed into a pupa. The adult emerges from the pupa in from one to two weeks according to the temperature. In the northern states there is but one generation a year.

Preventive Methods.

In small patches the hills may be covered when the plants are young. On larger areas dusting with air-slaked lime, land plaster or even road dust to which has been added enough turpentine, kerosene or other material with an offensive odor to give it a strong odor. The repellant should be dusted over the plants when the leaves are moist. The application may be made with dusters made for the purpose or mosquito netting can be used by folding it two or three times. The repellant to be effective must be on the leaves all of the time, thus the necessity of frequent application.

In order to prevent, as much as possible, the depositing of eggs on or near the base of the plants, it is recommended to use tobacco dust in liberal quantities around the young plants. The dust should be fresh as the odor is the effective part of the repellant.

Repellants.

When the plants have begun to make vines, it is best to use a liquid spray. A weak solution of lime and sulphur in combination with arsenate of lead makes a good repellant but Bordeaux is nearly as good as a repellant and is a better fungicide. While some authorities recommend full strength Bordeaux, others say a weaker solution, 3-6-50 or a 2-4-50, is safer. The addition of the arsenate of lead at the rate of three pounds to fifty gallons makes the mixture more effective against the striped beetles.

Whether lime and sulphur or Bordeaux is used, the applications should be made very thorough. The fact that the melon vines grow very rapidly causes much new leaf surface to be exposed each day. To be effective against either bugs or fungus diseases it is necessary to make frequent sprayings during the rapid growing period. The spray material should be directed in such a way that as much of it will be deposited on the under side of the leaves as possible.

While the striped beetle is a biting insect and feeds freely, especially on the young plants, the most serious damage done by this insect is the transferring of the bacterial wilt.

This disease is becoming more serious from year to year, partially due to lack of knowledge of the nature of the disease and methods of control, but principally because of the work of the striped beetle in spreading it. In some instances, the entire plant dies at one time, in which case the infection took place at the base of the plant or in the roots. More often, however, the infection takes place one or two feet from the base of the stem. The first indication of the presence of the disease in the latter instance is the wilting and dying of one or two leaves. In a short time, the part of the vine from the affected leaves outward will wilt and die, usually followed a few days later by the dying of the remaining portion of the plant. When the plants die one part at a time, it is very good evidence that the striped beetle, stink bug or some other insect has caused the infection. However, the striped beetle is the most common cause of infection.

Besides following the suggestions given for the control of the striped beetles, the diseased plants should be removed and destroyed to lessen the sources of infection. The wilt attacks all varieties and it is doubtful if strains which will effectively resist this disease can be developed.

Ingham Co.

C. W. WAID.

CABBAGE AFTER EARLY GARDEN.

Cabbage is an excellent crop to replace the early garden where we do not care to keep up a succession of such vegetables. Many of us care little for these early crops after their season, and yet we want the ground to be occupied, and cabbage is one of the most valuable vegetables from a food value standpoint.

Last week we went over our rows of spinach, radishes, onions, lettuce, and such early vegetables and planted cabbage seeds every eighteen inches in the rows. Our garden is planted in long rows a foot apart to make it possible to cultivate with a wheel hoe. We planted every other row to cabbage. This makes it possible to have the cabbage coming on at the same time we are using the other vegetables.

Cabbage plants can be set in between the potato rows when the potatoes have been given their last cultivation. The potatoes will come off the ground in July if the early varieties have been planted, which is usually the case unless potato growing is a business, and the climate is adapted to the late sorts. Sometimes the potatoes are left in the ground, but even then the cabbage can take possession, and will not interfere with the digging.

Sweet corn is another crop that is out of the way in time for cabbage planting, for some of the finest cabbage I ever saw was fall planted, or rather late summer planted. Early varieties can be planted quite late and will head up nicely. Late sorts will head after potatoes and corn.

Kansas.

L. H. COBB.

TROUBLE DEPARTMENT.

Turnips and Rutabagas.

I am thinking of putting in four acres of turnips and rutabagas. Will you tell me the best kind to sow? I wanted them for table use, as beans are too high.

Ionia Co.

W. D. H.

The following varieties of turnips are good ones: Milan, Purple Top, Munich and Teltow. The latter variety is especially good for home use.

The Improved Purple Top rutabaga is one of the best varieties. The large White Top rutabaga is a variety which is excellent for either table or stock use.

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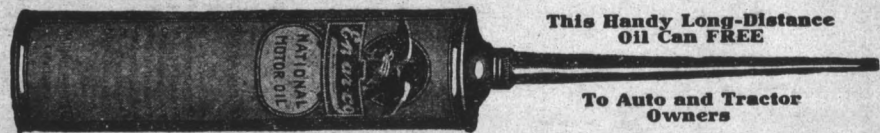
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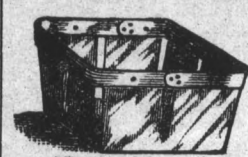
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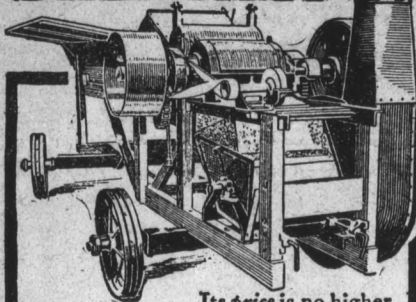
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A gallon of SO-BOS-SO KILFLY will spray 200 cows—or one cow 200 times. Used twice a day on cattle and horses, it works a transformation that you will wonder at. You should not be without SO-BOS-SO KILFLY on the farm. Ask your dealer to-day.

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NEWTON'S Heave, Cough, Distemper and Indigestion Cure.

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CURES HEAVES BY CORRECTING CAUSE—INDIGESTION. IT'S A GRAND CONDITIONER AND WORM EXPELLER

Safe. Most economical. Excellent for Cattle and Hogs. \$1.00 per can at dealers, at same price by parcel post.

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When writing to advertisers please mention The Michigan Farmer.

Pasturing Sweet Clover

WITH the exception of alfalfa on fertile soils, no other leguminous crop will furnish as much nutritious pasturage from early spring until late fall as sweet clover, when it is properly handled. Live stock thrive on it. Animals which have never been fed sweet clover may refuse to eat it at first, but this distaste can be overcome by turning them on the pasture as soon as the plants start growth. There is practically no danger from bloat from sweet clover, according to Farmers' Bulletin No. 820, "Sweet Clover; Utilization," which has just been issued by the United States Department of Agriculture.

Pasturing Stock on Sweet Clover.

When sweet clover has been seeded two years in succession on separate fields, the fields sown the first year may be pastured until the middle of June, when the stock should be turned on the spring seeding. When handled in this manner excellent pasturage is provided throughout the summer and a hay or seed crop may be harvested from the field seeded the previous season.

Some of the best pastures in Iowa consist of a mixture of Kentucky bluegrass, timothy and sweet clover. On one large farm stock is pastured on meadows containing this mixture from the first part of April to the middle of June. From this time until the first part of September the stock is kept on one-half to two-thirds the total pasturage acreage. The remainder of the pasture land is permitted to mature a seed crop. Usually from two to four bushels per acre of reseeded seed is obtained from this portion of the pasture. After the seed crop is harvested, the stock again is turned on to the acreage where they feed on the grasses and first-year sweet clover plants until cold weather. The seed which shatters when the crop is out is usually sufficient to reseed the pasture.

It is essential that sufficient stock be kept on the pastures to keep the plants eaten rather closely, so that at all times there will be an abundance of fresh shoots. Grazing induces the plants to send out many young shoots close to the ground, so that when the plants are permitted to mature seed a much larger number of stalks are formed than would be the case if the first crop were cut for hay. Excellent stands of sweet clover will produce an

abundance of pasturage for two to three mature animals per acre, from early spring to the middle of June. Cattle which are pastured on sweet clover alone crave dry food. Straw or hay should be present in the meadow at all times.

Sweet Clover for Dairy Cattle.

Experiments by many farmers in the middle west show that sweet clover is an excellent pasture for dairy cattle. When cows are turned on sweet clover from grass pastures the flow of milk is increased and its quality improved. Other conditions being normal, this increase in milk production will continue throughout the summer as the plants produce an abundance of green forage during the hot, dry months. If pastures are handled properly they will carry at least one milch cow to the acre during the summer months. Tainting of milk and butter, sometimes reported, may be avoided by taking the cows off the pasture two hours before milking and keeping them off until after milking the following morning.

Excellent for Hogs.

Sweet clover has proved to be an excellent pasturage crop for hogs. It is usually seeded alone and pastured for two seasons. The hogs may be turned on the fields the first year as soon as the plants have made a six-inch growth. From this time until late fall an abundance of forage is produced as pasturing induces the plants to send out many tender, succulent branches. Pasturing the second season may begin as soon as the growth starts in the spring. If the field is not closely grazed the second season it is advisable to clip it occasionally, leaving an eight-inch stubble, so as to produce a more succulent growth.

An acre of sweet clover pasture ordinarily will support twenty to thirty shoats, in addition to furnishing a light cutting of hay. For the best growth of the hogs they should be fed each day two pounds of grain per hundred-weight of the stock. Hogs are very fond of sweet clover roots and should be ringed before being turned on the pasture. The tendency to root may generally be overcome by adding some protein to the grain ration. Meat meal serves this purpose very well.

Sheep relish sweet clover and make rapid gains when pastured on it. Care must be taken to see that pastures are not overstocked with sheep, as they are likely to eat the plants so close to the ground as to kill them. This is especially true the first year before the plants have formed crown buds. Yellow biennial sweet clover will probably not suffer from this cause as much as the white species, because the plants make a more spreading growth and are not likely to be eaten so closely to the ground.

Horses and mules do well on sweet clover pastures. On account of the high protein content sweet clover provides excellent pasturage for the young stock. No cases of slobbering have been noted with horses.

CLIP PASTURES TO KEEP LIVE STOCK GRAZING TO MAXIMUM.

Under the high prices for all feeds, every farmer desires to get the greatest returns possible from his pastures. For his live stock, whether horses, cattle, hogs, sheep, any or all classes to make the best growth on pastures, the forage must be palatable. As soon as the plants become somewhat woody, they are not so palatable and the live stock will not graze as they should.

If the animals do not eat the maximum amount of forage their gains in weight will be either slower or made more largely at the expense of the grain fed. Either way means a loss to the farmer.

The men who are using clover and

alfalfa pastures should exercise some care in keeping these splendid pastures in palatable condition. Within a short time, clover will become more or less woody. Alfalfa, after blooming, is not relished by hogs. If these pastures are clipped when they need renewing, new leaf growth begins from the clipped plants. This new growth is young and tender, the live stock relish it and the gains in weight reflect the increased appetite.

Alfalfa should be clipped when the buds at the base of the plants are developing into new growth a few inches high. Another precaution with alfalfa pasture is to not pasture it so closely that it is not able to grow ahead of the stock.

If your pastures fail as a rule in June, July or August, better select a lot, break it up, harrow to a fine seed bed and sow six to eight pounds of rape to the acre. The rape will grow into a very valuable pasture for either hogs or sheep and keep them gaining when otherwise they would be standing still or going backwards.

Ind. Col. of Ag. G. I. CHRISTIE.

CARING FOR THE WORK HORSE IN SUMMER.

It would no doubt be one of the greatest surprises that we have had for some time, were we to realize the large number of horses that are lost each year from the lack of care and from the heat; the time is here again when we must watch our horses carefully so that they may work safely and to the best advantage for us during the long hot days of summer.

The horse that will stand the hot weather well is the one that has been well groomed and cared for; you must feed your horses well if you want them to work well and if you want to get the most from your feed you must keep them clean and comfortable. The horse that is working hard during the hot weather should be watered at least four or five times each day, and every hour or hour and a half would be still better.

Some horses carry a heavier coat of hair than others and most of these horses will do much better when they are clipped; some horse's coats are so thick that they do not dry off until the next morning; horses like this should be clipped.

Watch the horse, as many times during a hot day the horse will stop sweating and will start breathing fast; this horse should be moved into the shade at once and restored or he will become overheated to such an extent that he will continue to pant on hot days.

It is quite common for horses to suffer a sun stroke or a heat stroke during the hot summer days; we have two forms of this condition, one in which the animal carries a high temperature and in which the animal is delirious or acts much the same as though it had a stroke of apoplexy; such animals should have ice or cold water applied to the head and body and be given stimulants, preferably by means of a hypodermic syringe; the other kind do not have a temperature but rather feel cold and clammy to the touch; they should be covered with blankets and be given stimulants. Secure a veterinarian as soon as possible.

Work your horses moderately during very hot days and water them often; protect them from the flies and watch them carefully; keep their bowels loose by pasturing or feeding laxative feeds.

Ohio. G. H. CONN, D. V. M.

The Greatest Paper.

Charles Kletzen, Bath, Mich., who has been advertising live stock in the Michigan Farmer, writes: "Please stop my advertisement until September; we are sold out of surplus stock. The Michigan Farmer is truly the greatest paper for advertising I ever knew of. We have had all we could do to fill orders. The most expensive mediums pay the best."

Grape-Nuts

Made from choice whole wheat and malted barley, this famous food retains the vital mineral elements of the grain, so essential for balanced nourishment, but lacking in many cereal foods.

From every standpoint—good flavor, rich nourishment, easy digestion, convenience, economy, health from childhood to old age—Grape-Nuts food.

"There's a Reason"



Corn Silage as Summer Ration

THAT corn silage can be used to greater advantage than soiling crops for supplementing poor pastures and keeping up a uniform and economical flow of milk has been brought out in a three-year test carried on at Wisconsin College of Agriculture. Corn silage was compared with soiling crops three consecutive summers and it was found that the dairy herd under attention did better and entered the fall and winter season better physically, while profits increased.

It is a matter of common observation that the average dairy farm is over-stocked from the middle of July on, so far as pastures are concerned. That this is true will be found by looking at the creamery or cheese factory vouchers. The drop in production in nine cases out of ten may be attributed to lack of sufficient feed.

Interesting facts are given in connection with the Wisconsin herds taking part in the soiling crop vs. corn silage tests. The herd consisting of twenty-four, twenty-six and twenty-two cows, respectively, for the three years, was divided as uniformly as possible into two lots, special consideration being given to breed, size, stage of lactation, and the production of milk and butter-fat.

The Best Silage Corn.

The trial opened each year on the first of July, and continued twelve, ten and thirteen weeks for each of the three years. The bulk of the feed given to one lot was corn silage and to the other soiling crops. The corn used in the silo was Wisconsin No. 7 white dent and Golden Glow yellow dent. These varieties gave the most satisfactory returns for a series of years on the university farm, and yielded a maximum amount of feed. Under favorable conditions the yields were from fifteen to eighteen tons per acre of green corn.

The soiling crops used in the experiment were as follows: Red clover, peas and oats, green oats, green sweet corn, and green dent and flint corn. They were planted so that there was a succession of cuttings, beginning with clover on June 29 and finishing with dent corn September 5.

Soiling More Expensive.

In the production and feeding of soiling crops the expense is greater for labor and seed. The cultivation is about the same. The daily harvesting of soiling crops in all kinds of weather and in the limited quantity required is the most inconvenient and expensive system of harvesting employed. It took from one to two hours labor daily for man and team to cut and haul the green feed, which added about \$12 to \$15 per month to the cost of feeding for which no adequate increase in milk was obtained over that secured from the corn silage. The comparative yields of soiling crops as compared with silage were 4,450 pounds of dry matter per acre for peas and oats, 6,633 pounds for corn used for soiling purposes, and 8,850 pounds for corn silage.

The yield in milk for the first year amounted to six per cent in favor of the silage fed cows; two per cent for the second year, and four per cent for the third year, in favor of soiling crops.

The amount of feed to supply a cow daily in summer depends upon the condition of the pasture, the size of the cow, the stage of her lactation, and her milk production. The cows in this experiment weighed from 950 to 1250 pounds and were supplied with silage and soiling crops ranging from twenty to forty pounds daily. A few of the largest cows consumed from forty to forty-eight pounds per head daily.

Summer Silage Best.

Comparatively few farms are organized at the present time to have silage available in the summer months. A

silo for summer feeding should preferably be smaller in diameter than the average silo for the reason that it is more difficult to feed silage fast enough to keep it from spoiling.

In years of short rainfall, soiling crops are apt to be scant at the same time pastures are at their poorest. The carrying over of a corn crop from one year to the next tends to equalize the quantity of feed available from year to year; hence insures the dairyman against losses in milk production due to a scarcity of feed, which we are at present experiencing.

From all observations and the results of the trials herewith set forth, it appears that dairy farmers will find it a matter of greater convenience, saving, and profit to feed corn silage to cows in case of scant pastures than they will to feed soiling crops, considering the present labor and seed situation.

E. W. GAGE.

CLEAN DAIRY UTENSILS NECESSARY FOR CLEAN MILK.

Most of the bacteria which get into milk come from the dirty cow and from the utensils, such as cans, pails, strainers, coolers, and separators, which have not been properly cleaned. In winter the cows are likely to become dirty from confinement in the barn, but in summer they are easily kept clean so that they are then of little relative importance in contaminating milk. On the other hand, a far greater number of bacteria get into milk from dirty utensils in summer than from a dirty cow in winter.

A bacterial count recently made from some of the rinsing water left in an eight gallon can, which had been washed twelve hours before, showed the can to contain more than three billion bacteria. Eight gallons of milk placed in this can would have received a contamination of nearly 100,000 bacteria for each cubic centimeter. This can had been thoroughly rinsed and left covered in a room where the temperature was about seventy degrees F. An experiment made during the winter when the temperature was below fifty degrees showed fewer than 3,000,000 bacteria in a can similarly treated, which would mean a contamination of fewer than 100 for each cubic centimeter of milk.

A can which was rinsed, subsequently heated with steam and then turned right side up with the cover off until dry, contained approximately 200,000 bacteria or a contamination of about seven for each cubic centimeter.

Much emphasis has been laid upon thorough cleaning of utensils, and rightly so, but the process of drying is equally as important in warm weather. Drying should not be done with a cloth, but by heating the utensils in hot water, steam or oven sufficiently to evaporate moisture.

General recommendations for the care of utensils are: 1. Rinse in lukewarm water as soon after use as possible. 2. Wash in hot water containing washing powder which will remove grease. 3. Rinse in clean hot water and place in live steam for fifteen seconds, drain and place right side up until steam evaporates. On the farm where steam is not available sunning will give effective results. 4. Invert in a clean protected place when dry.

The requisites of good cows are first, good pure-bred stock, good care in breeding, feeding and management. There are great possibilities in the production of good cows but these are seldom ever seen, appreciated, or attained except by an intelligent thoughtful feeder. The earmarks of a business farmer and intelligent feeder may be seen in his herd.

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"Z"
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The 3 and 6 H. P. Sizes
Successfully Operate on

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BEFORE you buy a farm engine look up the dealer who displays the "Z" Engine sign. It's a sign of quality and a guarantee of your satisfaction.

Low first cost — low maintenance cost — simple construction — light in weight — built-in magneto — these are a few "Z" Engine qualities you want.

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Ask your dealer to demonstrate the qualities that make it superior to other farm engines. See it in operation and prove to your own satisfaction that it's the best for your work.

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on skids with
BUILT-IN
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3 HP \$82- 6 HP \$143
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The President Says:

"It is of the most imperative importance that everything possible be done and done immediately to make sure of large harvests."

Conserve and Increase Your Forage Crops

Turn under part of your pasture and plant it to saleable crops. Feed your stock this winter cheaper, easier and more profitably with a few acres of corn cut into ensilage with a Kalamazoo Ensilage Cutter and stored in a Kalamazoo Silo. Stop wasting land that should be used for money crops. This year, you have a chance to make big profits.

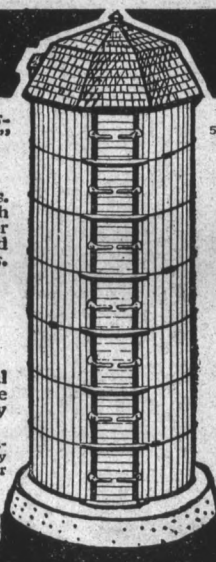
Kalamazoo LIFE-TIME-SILOS

are built to meet the exacting farmer's needs. Best in design, material and workmanship. Have every desirable feature a silo should have and embody the "know how" acquired through more than twenty years experience in silo building.

Wood Stave Silos—Your choice of four of the best time-defying woods. Kalamazoo Silos are manufactured complete ready to set up. Quickly and easily erected by experienced home labor. All Kalamazoo silos are made with Galvanized Steel Door Frames and continuous doors, forming a safe ladder entire height of silo.

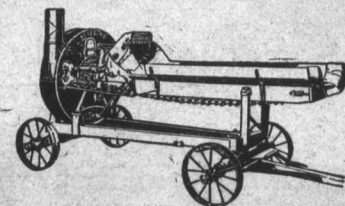
Write today for our free descriptive booklet. If interested in an Ensilage Cutter, ask for Kalamazoo Cutter catalog. Easy payments, if you wish.

KALAMAZOO TANK & SILO CO., Dept. 218 Kalamazoo, Mich.



Un-wear-out-able

DICK'S
Blizzard
Ensilage Cutter



"All the repairs I used in these twelve years were two shear plates and three sets of knives. The rest is good as new today. There is simply no wear out to the Blizzard". J. P. Moskop, Valmeyer, Ill.

All parts of wear are replaceable at small expense in the Blizzard. Earliest machines are still running. Latest machines have good improvements, but same old reliability.

The Blizzard is simple, compact, and does the work with minimum power. Knives and fans both mounted on heavy-rib-reinforced fly wheel. Every ounce of power counts. Your regular farm engine is big enough. World's highest silos have been filled with Blizzards. Cuts silage evenly, no matter how fast it's run. Repair expense small. Practically no wear-out to it.

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—It's a book every silo owner should have. Explains the different principles of building silo fillers, and describes the Blizzard in detail. Contains full particulars regarding the new double feed Blizzard. Gives wonderful capacity, with minimum work of feeding.

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Yet despite this extensive competition, one car in every five now in service is equipped with Goodyear Tires.

And more Goodyear Tires are sold in America than any other brand.

We offer this information not in any boastful spirit, but merely to show the overwhelming preference for Goodyear Tires.

We know, and you know, that this preference could not exist if Goodyear Tires were not *plainly superior* to ordinary tires.

But it does exist—a plurality of American motorists *does* prefer Goodyear Tires.

And what is more important, their preference is growing more pronounced with every day.

The margin of Goodyear leadership is steadily widening.

This fact, alone, means all to you that can be said of tires.

It means that throughout this nation, wherever tires are used, Goodyear Tires give maximum service and satisfaction.

It means that they give greater mileages than other tires, deeper comfort, surer security, stouter endurance, more freedom from trouble.

These are the cardinal elements of satisfactory tire service, and these are the elements in which Goodyear Tires excel.

Ask your neighbor who uses Goodyear Tires what he thinks of them.

He will verify every virtue we have mentioned—that is why he prefers them.

Sometime, *you* will come to Goodyear Tires. Sometime, *you* will prefer them.

When you do come to them, buy them of the Goodyear Service Station Dealer near you.

You can deal with him face to face; he is there on the ground for your benefit, to help you get out of Goodyear Tires the final mile we have built into them.

Ask him about Goodyear tubes—*better* tubes—get him to tell you how much they mean in lengthening a casing's life.

And ask him about the Goodyear Tire-Saver Kit, which, as a primary factor in tire conservation, certainly deserves a place in your car.

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AKRON

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

DURING the past half century or more there has been a constant movement, especially in the older parts of the United States, of a considerable portion of the highest type of young manhood from country to city, thus enriching the professions and trades by causing an irreparable loss to the country. The purpose of this paper is to point out one of the chief causes of the evil; to tell how and why agriculture suffered so much from it; and to show what the remedial agencies are and how they are working.

No effort will be made to cover the entire range of the subject, nor does the writer promise, as did the colored parson, to "define the indefinable, explain the unexplainable, and unscrew the unscrutable."

Education: To or Away From the Farm

By I. B. McMURTRY

This essay won first prize in the Lawson Memorial Prize Essay Contest at M. A. C.

A very able investigator recently stated that a carefully taken census shows the appalling fact that over 400,000 people, in a single eastern state, had left the country and gone to the city. He also states that about 4,000,000 acres of farm land are tenantless in New England, 4,000,000 in the Middle Atlantic States, and over 3,000,000 acres in the South Atlantic states. These farms are abandoned, not because the soil is worn completely out, not because the owners were unable to produce a living and had

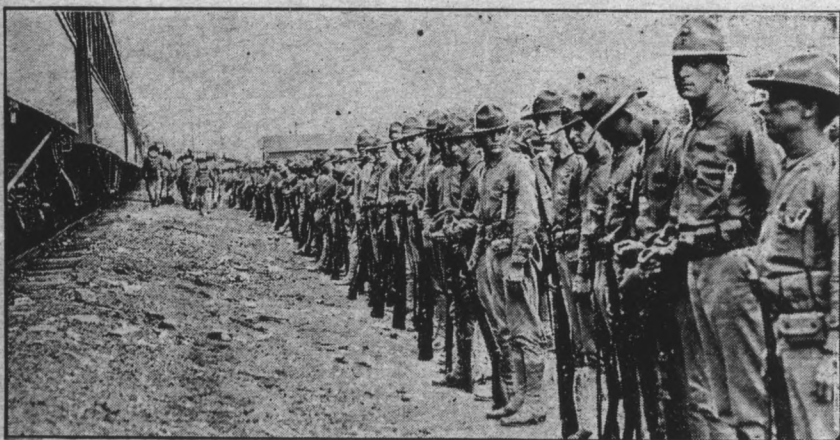
to submit to mortgage foreclosure, but simply because the boys and girls left to make their mark in the city. When the parents died the farms were sold or left—unoccupied—unworked—abandoned!

Why this movement from country to city which has almost prostrated agriculture in many parts of our land? The chief answer is that the ideals placed before the boys and girls were wrong. Any person who attended school in the country twenty-five, thirty-five or forty-five years ago will remember that the

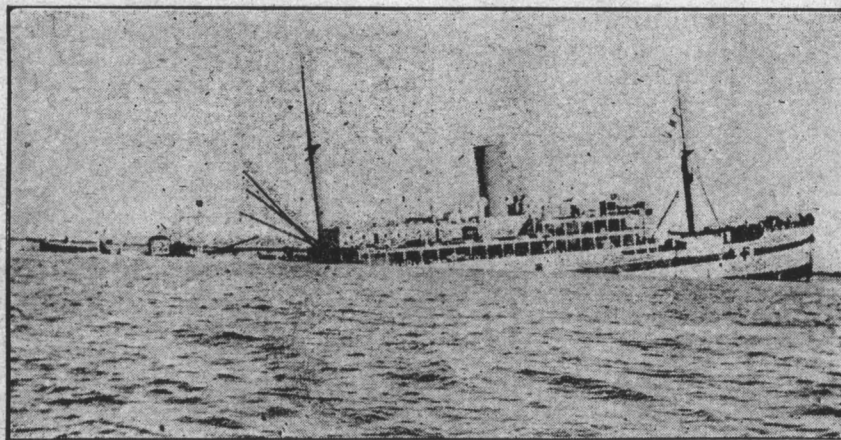
heroes in the stories of the readers, the subjects of the longest biographies in the histories, and the characters held up by the teachers as examples, were, with rare exceptions, born in the country, attended the country school, went to college, entered one of the professions and achieved greatness. Every boy was often reminded that Andrew Jackson, Daniel Webster, U. S. Grant, James A. Garfield, Abraham Lincoln, and many others went from lowest country birth to fame and renown in the city. No examples of great farmers were held up. The evolution was toward the city.

Thus it was that the resolve to become a doctor, minister, teacher, or lawyer became firm in each aspiring young mind, and it produced, in the

WORLD EVENTS IN PICTURES



U. S. Marines, Now in France Training Under General Pershing.



Hospital Ship "Gloucester Castle," After Being Torpedoed by U-Boat.



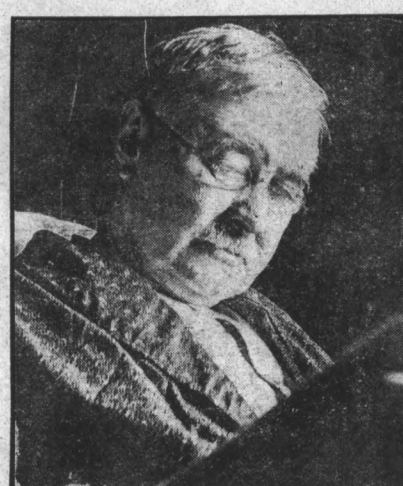
Miss Lloyd-George Cares for Children of Munition Workers.



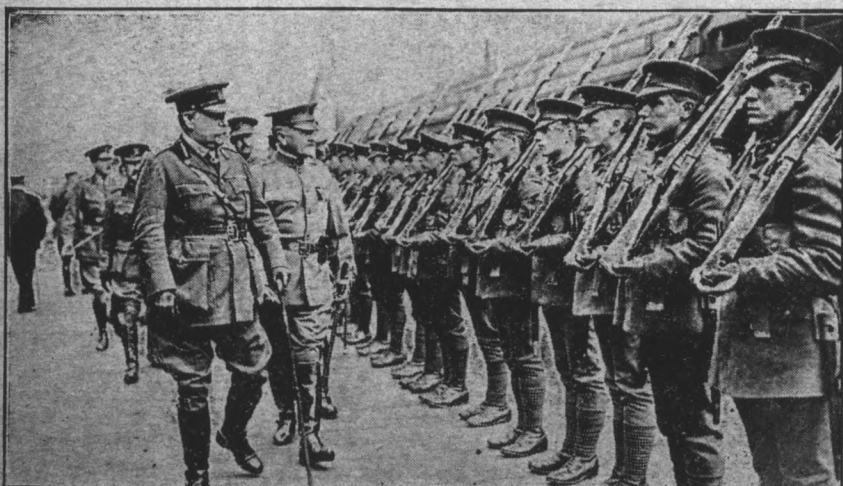
Yale's Crack Runner in Marine Uniform.



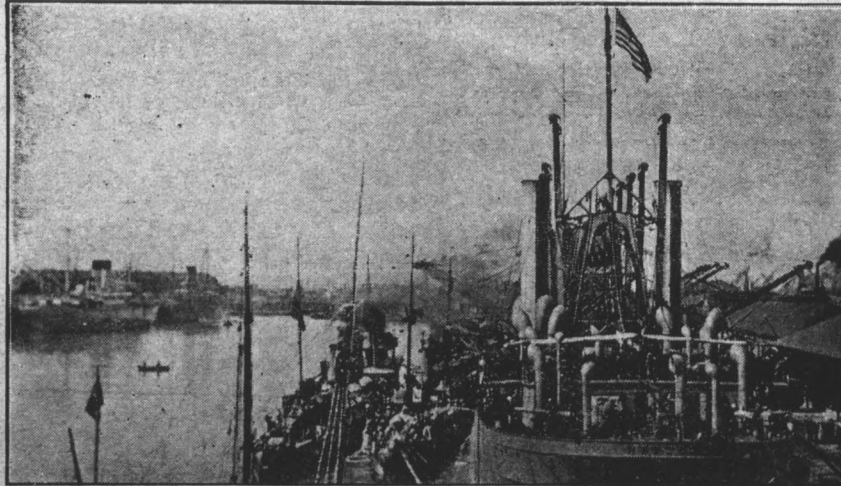
New Type of Gas Mask for American Soldiers.



Irish Leader Visits America in Interest of Home Rule.



Gen. Pershing Inspects Royal Welsh Fusiliers Upon Arrival in England.



Transport and Destroyer which Took First American Contingent to France.



Playmate Shoes For Children

PLAYMATE shoes are particularly well adapted for Children and Misses, because they withstand hard wear and are shaped to suit the requirements of growing feet. They are substantially built throughout, on attractive lasts; gun metal, seven-inch cloth or matt top, English polish, single sole McKay.

Insist on Getting Playmate Shoes

There's a Playmate shoe dealer in your town who will quickly fit a Playmate shoe to the foot of any child or miss. Go to the Playmate dealer and examine these superior shoes. Give them a trial. They will give better wear, more service and greater satisfaction than any other shoe at the same price. Take your children to the Playmate dealer and have him fit their feet with Playmate Shoes.

HIRTH-KRAUSE COMPANY

Hide-to-Shoe
Tanners and Shoe Manufacturers
GRAND RAPIDS MICHIGAN

Mr. Automobile Owner:

Are you insured against fire, theft and liability? The Citizens' Mutual Automobile Insurance Company, of Howell, carried the insurance and paid for the following automobiles by theft:

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Jerry Kastle, New Boston	300.00
Earl W. Tucker, Wyandotte	375.00
Benjamin C. Hilliker, Swartz Creek	320.00
Anton Keidis, Scottville	308.00
R. Barringer, Richland	275.00
Mutual Telephone Co., Imlay City	315.00
Frank S. Hagerman, Stevensville	425.00
Glen C. Gillespie, Prosecuting Attorney, Pontiac	300.00
Kirk Van Winkle, Lansing	325.00
W. H. Williamson, Oakland county	975.00

The above losses are paid from every part of the state. The wise man will insure in the Big Mutual. Twenty-five thousand policies issued, 350 claims paid, and \$70,000 of cash in bank.

Cost is only \$1.00 for policy and 25c per h. p.

See local agent, or write

Citizens' Mutual Auto. Ins. Co., Howell, Mich.

Increase Your Milk Flow



Use Acorn WaterBowls

AUTOMATIC CONTROL—FRESH SUPPLY AT EVERY DRINK

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For Sale by Dealers Everywhere

JOHN W. LADD CO. Detroit—Cleveland

very nature of the case, a dislike for the farm and farm work. In most places the teacher was aspiring to make a mark in one of the learned professions and was teaching only as a gentlemanly means of earning money to pay college expenses. The teacher was very careful to emphasize the teachings of the books and make it clear that each boy had as good a chance as Webster or Garfield. It was necessary to go through high school or academy, then through college into one of the professions, and greatness—possibly to be a governor or even president of the United States—was assured!

The boy's ambition was fired with a deathless flame. At any cost he would write his name high on History's scroll. High school and academy courses of study were designed to fit students for college entrance. College courses were planned to lead to the professions. The college was the Mecca toward which the bright boy turned his face and at whose shrine he devoutly worshiped.

Agricultural and other technical colleges had scarcely any professional standing. They were nicknamed "bread-and-butter" schools, and their graduates were looked upon as mere farmers, mechanics, and tradesmen. It was tolerable for the boy with rather inferior mental capacity, to go to a bread-and-butter school and then settle down to a humdrum life as a farmer, engineer, mechanic, or tradesman; but for the lad with bright eye and keen intellect the road to honor, distinction, and fame could lead only through the enchanted field of classical education into one of the learned professions.

The effects of this educational system became very apparent. The most painstaking investigation made especially for the purpose shows that of the men higher up in professional and political positions—the lawyers, college presidents, doctors, financiers, governors, statesmen, and diplomats—who received their education during the twenty years following the Civil War, over eighty per cent were farmer boys. The system was very good for the professions. It put the choicest red blood and unbounded ambition into them, but it did irreparable damage to agriculture. Untold numbers of men who would have made agricultural leaders were trodden under foot in the scramble and struggle for position in the crowded professions. Clergymen, teachers, doctors, and lawyers became so plentiful that the professions were overcrowded. The average earnings in any of those professions are, even today, lower than the wages of a good plumber or brick mason.

A new educational system is in process of formation. A new era is dawning for agriculture. The tilling of the soil is now looked upon as the most ancient and one of the most honorable callings. Scientific agriculture has already been so well developed and its teaching contains so much of value from both educational and vocational standpoints, that not only do the country school courses of study provide for considerable work in the subject, but the high schools and state normal colleges have organized special departments for the teaching of scientific agriculture. Today no institutions of learning have larger numbers of students than the agricultural colleges; no schools are more liberally supplied with working capital and superb equipment; no institutions have more broad-minded and capable faculties.

The country boy is now told that he may achieve success in any one of a score of callings. Vocational training is offered to fit him for any of them. The great careers of the last fifteen years have been made in business rather than in the professions. With the agricultural college extension work, county agents, club work, and

the like, which are being used with such marked success throughout the country districts, the country boys are being shown the vast possibilities of agriculture.

In a country district where the yield of corn, for example, is less than thirty-five bushels per acre, the local members of the Boys' Corn Club who, under competent direction, succeed in producing 125 to 150 bushels of corn per acre, become the heroes of the neighborhood as well as its inspiration. When the boy who makes the prize yield of the County Boys' Corn Club is furnished a scholarship at the Agricultural College all eyes turn to him. He has achieved greatness.

Year before last the average yield of corn in Michigan was thirty-two bushels per acre. The Corn Club boys averaged sixty-seven bushels. The state average of potatoes was ninety-seven bushels. The potato club boys averaged 246 bushels per acre.

The boy who succeeds in raising stock more profitably or in producing greater crops at lower net cost than

his father, it is fairly certain will long for the time when father will give him the management of the farm or when he can have a farm of his own.

At a recent camp-fire conference of the Michigan Boys' Club representatives the leader asked each boy what vocation he intended to follow. Thirty-two answered. Of these twenty-four intended to become farmers. Only one of the other eight intended to enter a profession. The graduates of the agricultural colleges are either going onto the farms or into teaching.

Thus it is seen that the old-time tendency to place the great emphasis on training for a professional career and to belittle life on the farm has almost reversed itself. Today school boys are made to understand that the professions are overcrowded and underpaid but that the openings for a career on the farm were never better. The budding youth is shown that on the farm, as nowhere else, he may have the greatest comforts and conveniences, and enjoy to the full, health, happiness and long life.

"Contraband" RANDALL PARRISH

Dade endeavored to hide a grin. "Not exactly a reason sir," he answered softly, "but I took it from what he said that he was not overly proud of the way he was marked up, sir. He didn't appear to me to be in the very best of humor, sir, if I may be permitted to say so."

I devoted a few monets to the meal, but when Dade departed on an errand forward, decided I might just as well discuss the situation frankly.

"I am beginning to fear," I said quietly, "that Mr. Fergus McCann intends to make us all the trouble possible, and is even now behind most of the dissatisfaction on board. Do you know anything definite, Mr. Olson?"

The mate paused in his eating, with knife and fork uplifted.

"You mean the man who came aboard along with you and the lady, sir?" he asked.

"Exactly; his name is McCann."

"I had not heard, sir. May I ask if he is rich?"

"Quite so; he was a guest on the yacht Esmeralda. Now that I have answered these questions, Mr. Olson," and I stared into his rather emotionless face intently, "perhaps you will be kind enough to answer mine."

"I would know what I talk," he returned stubbornly. "This man never speaks to me at all, sir. The only time I see him was when he come over the side, but I hear plenty of talk among the men. That was before I was made officer, sir; no one say a word to me since. He, this Mister McCann, he offers ten thousand dollars to be put back in New York."

"So that's his game! Who brought the word forward?"

"Cookie, I think, sir. Anyhow he begun to talk first, and then Liverpool Red, and a fellow called Jim White slipped into the galley to make sure of things."

"And McCann satisfied them that he actually had the money."

"He sure did, sir. I overheard Jim White say that he had a belt on him with more money in it than they'd ever seen before in all their lives. The fool—I beg your pardon, Miss—didn't know no more than show it to 'em. Why, the sight of it fairly drove them two wharf-rats crazy."

He stopped, his eyes on his plate, and none of the rest spoke. The same thought must have been in all of our minds, but we felt that Olson had not finished his tale. The silence caused him to glance up.

"There's half a dozen men forward," he said slowly, "who would murder

their grandfathers, sir, to get hold o' all that coin. The rest o' the crew are decent enough fellows as sailormen go, but there's liquor aboard yet, and all this 'ere war talk has scared 'em against continuing the voyage."

"McCann told them?"

"He told Cookie an' Liverpool, an' they circulated the news. 'Tis said we're chuck up with contraband, sir, an' that if we're took every man jack of us will be chucked into an English or French prison."

"You expect a mutiny, then, Mr. Olson?"

"I don't know what'll stop it," he answered solemnly. "The men went after sorter take your measure, sir, and hear what it was you proposed doing. They ain't had no chance to git tergeth'er an' talk since, but it's my notion they're ripe enough for the job."

I looked him squarely in the eyes.

"And how about you, Mr. Olson?"

"Me, sir?" his lips grinned. "If I hadn't intended for to stay with you, sir, I never would a took the job."

I reached out my hand, and our fingers locked.

"Good; with both my officers loyal, we'll find a way out of this mess. The first thing to do will be to attend to McCann. Have you finished your meal?"

"Yes, sir."

"Then come with me into the captain's stateroom, until we see what we can find there useful."

The lady and Bascom remained seated at the table, but had finished their meal. Neither made any motion to stop us, or attempted to speak, although I heard their chairs pushed back before we left the cabin, when Dade, and the boy, began to clean up. We found the captain's door unlocked, and the room in fairly good order. It was sparsely furnished, containing only two chairs, and a heavy desk, in addition to theunks. A bit of rag carpet covered most of the deck, and an iron-bound sea chest, the key still in the lock, was stowed away in one corner. Above the desk hung the photograph of a pleasant-faced woman, and various nautical instruments were securely strapped along a shelf. I disturbed things as little as possible, leaving any necessary research into Captain Hadley's private affairs to a later date, but sought with some anxiety through a roll of maps shoved behind the chest, Olson holding a lantern aloft until I finally brought forth an old chart of the North Atlantic. We bent over this, outspread on the desk between us, and Olson's stubby forefinger

traced the prickings of two voyages around the Orkneys into the North Sea.

"All of ten years old," I said, "but accurate enough for our purpose. Now if we can only find the rest of the route. Try those charts again."

He unearthed one at last, showing the termination of the two voyages to have been Christiana, while the chart revealed also, although in somewhat less detail, the German coastline. I was far from satisfied with this discovery, but nothing better could be hoped for. The total destruction of the charthouse forward made this find a Godsend indeed, and we were fortunate in the fact that Captain Hadley preserved his old maps. Bidding Olson relieve the first officer, I remained there alone for some minutes familiarizing myself with the two charts, and outlining in my mind the safest course to pursue. As I sat there the rising wind began to hurl rain against the closed glass of the port, and I could hear the splash of the drops on the deck overhead. An oiled coat, belonging to the skipper, hung dangling from a hook, and I slipped it on, extinguishing the light before closing and locking the door. Leayord was alone at the table in the cabin, which had already been cleared of its dirtied dishes, Dade disappearing with the last load as I turned about. A quick glance told me that neither Bascom nor Miss Vera were present.

"No change in the wind is there, Mr. Leayord?"

"No, sir; just a trifle heavier, with a bit more sea running; but the rain will keep that down, sir. The old hooker is riding nicely."

"So I observe. Most of the litter overboard?"

The heavier bith; some of the tackle it might be well to save. Anyway, it is so dark forward I ordered the lads to knock off until morning, sir."

"Perfectly right, if the deck are clear enough for us to work ship. I'll take a look forward myself."

I had advanced to the companion steps when Leayord's voice stopped me.

"Captain," he said in a hoarse whisper, "was you planning to go forward alone?"

"Certainly."

Leayord glanced about uneasily.

"Well, I wouldn't sir, if I was you—not tonight anyhow. The men are that ugly there's no knowing what might happen. Do you carry a gun, sir?"

"Why, no; I saw one there in a drawer of Captain Hadley's desk. You think the situation is as bad as that?"

"I'd go back and get it, sir," he said, soberly, "an' then keep to the after-deck till daylight."

"The men are drunk?"

"They've got liquor, an' there no use searching for it in the dark. When daylight comes we've got a chance—" He hesitated as though afraid of going too far.

"What is it? You were about to suggest something."

"Well, sir, maybe it's not my place, but if I was skipper, there's only one thing I'd try first of all to do, sir—I'd put that millionaire fellow you call McCann, where he'd keep away from the men forward. He's the one that's raisin' most o' the hell on board."

His words were no more than an echo of my own thoughts. An instant I stood staring at the rain beating fiercely against the glass of the companion, then turned back to the stateroom I had just left, slipped the revolver out of the desk drawer into my pocket, and reentered the cabin. Leayord pushed back his chair.

"Thank you," I said, "I shall take your advice."

"Will you need me on deck?"

"Not at present; this is your watch below. I shall remain up with Olson; he has scarcely had experience enough to be left alone yet. Better get all

the rest that you can, Mr. Leayord."

"Very well, sir."

I buttoned the oilskin closely about my throat and stepped out on deck, the wind driving the rain full into my face, and, for the moment, blinding me.

CHAPTER XV.

I Make McCann Prisoner.

It was intensely black forward, and no sound of movement reached me as I stood there above the swift patter of rain on the deck, the shriek of the wind amid the cordage aloft, and the slap of waves alongside. The Indian Chief was holding her head up to it finely, the buoyancy under foot yielding me an instant feeling of relief. Unless some accident befell the temporary steering apparatus, no ordinary storm would leave us in any danger. The great immediate peril was from within, rather than without—treachery of men, and not of sea. It was evident enough in my mind that there were two elements of evil aboard—liquor and McCann's wealth. Either alone would have been bad enough, but thus combined they rendered our situation more than perilous—and I was facing this peril comparatively alone.

Standing there in the shelter of the hood, the rain beating against the front of the cabin, an occasional flash of lightning illuminating the wet deck, the utter loneliness of my position gripped me strongly. I knew nothing of my crew, except that they were already mutinous and dissatisfied and under the influence of a few really dangerous men. No doubt there were loyal, honest sailors forward, but I had no way of knowing those who were to be relied upon in an emergency. I knew almost as little regarding the character of the newly chosen officers. Masters would doubtless perform his duty, but his work would keep him below, and he would prove of slight value on deck. My impression of Leayord and Olson was favorable enough; they were, undoubtedly, the very best material on board; yet, from long association with the fore-castle, it was only natural that their sympathies should be with their mates forward. An efficient sea officer is not made overnight, and either man might fail me at a pinch. As to Bascom, he could never be counted on; while as regards Vera—but at thought of her, the cold perspiration beaded my temples with a horror of what might yet occur on board. No, the burden was mine, mine practically alone. There were others in whom I had some measure of faith, and who, I believed, would follow my lead just so long as it was apparently successful. But it was up to me to strike first, to assert my authority, and then maintain it. This was the one thing which would impress the mind of a sailor—a quick decision, a swift blow. This very night we must win the ship, if ever, and the first man for me to gain control over must be Fergus McCann.

I reached this decision coolly and deliberately, yet with no clear plan of action in my mind. I did not even know where the fellow had secreted himself since coming on board, although it was evident enough that he was endeavoring to avoid encountering me until he could make fast friends with the more desperate spirits forward.

(Continued next week.)

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Placing the Blame

I CAN'T be bothered. Go ask your mother to tell you a story." It was the father of a lively four-year-old talking. Dad had just finished supper and gone out on the porch to sit in a comfortable rocker, smoke his pipe, browse over the paper and gossip with the neighbor next door who was out mowing his lawn.

Mother was upstairs putting the baby to bed. The table still stood waiting for her to clear away and wash dishes. There was bread to set and a couple pairs of stockings to be darned before she got time to look at the paper or draw a free breath. She didn't want to be bothered, but then, that is what mothers are for. So while she undressed the baby and washed the dishes she thought up stories to tell the sturdy lad who "tagged" everywhere she went, hanging to her skirts and getting in her way.

Father never found time to tell stories or to play much with his boy. He was too tired after working from eight o'clock in the morning till five o'clock at night. Mother worked from 6:00 a. m., till 8:00, 9:00 or 10:00 p. m., but she didn't do anything but housework and could let that go any time and lie down and rest. Besides children were women's work anyway. Father said so, and in this he had the backing of the rest of the fathers he knew.

But if bringing up the children was woman's work, father insisted that finding flaws in the method was man's. They were his children, after all, and if he didn't like things they did he had a perfect right to say so.

"What ails that kid?" and why don't he take care of his things?" were perfectly legitimate questions. Mother ought to train him to be neat and if she didn't father had a right to find fault with her. That was a whole lot easier than taking a hand in teaching the child to put things away, or even to pick up after himself, which example might have helped out with the boy.

As the lad grew older and went to school father called mother to account when her son did not get high marks.

"What's the matter with him, anyway? Don't he know anything? He ought to be thrashed," were father's stock phrases. It never occurred to him to go to school and find out what was wrong, or to help son out at home. Teachers were paid to see that young ones learned, and if they didn't learn it was either the fault of the teacher or of the mother. A man couldn't be expected to bother with working examples nights or interesting a kid in history or geography. And as to playing games with the boy, that was not to be thought of. If he knew enough to play there might be some sport in it, but what man was going to spend his evenings teaching a child to play dominoes or checkers?

All this sort of thing was up to mother. She used to get dead tired of it. It was sometimes hard work to pretend she was terribly interested in a half-played game of checkers, when she was dying to read a magazine. But someone had to play with the children and keep them happy at home, and they always looked to her. In fact, they looked to her for everything, pleasure, help with lessons, advice on their childish affairs, spending money, everything they wanted or desired.

Mother had their confidence, but father didn't care—at first.

By-and-by, though, the boys were young men. They still ran to mother for everything, and father began to feel like an outsider. He could hear sounds of gayety when he got near home, but things quieted down when he went in. He would go into a room to find mother and son talking earnestly, but conversation suddenly languished when he opened the door, and the boy slipped out as quickly as possible.

Father didn't like that. He began to get suspicious and moody. He demanded angrily to know what the talking was about, and when mother tried to quiet him and the boys sullenly refused to talk he shouted around that mother was setting the boys up against him. He complained to some of his pals and found that a like condition existed in many of their homes. Some of the men grumbled just as he did. Others were quiet and very thoughtful. One

even went so far as to wonder if they were not to blame themselves.

"I didn't pay much attention to my kids when they were growing up," he said. "They got the habit of running to their mother then, and I suppose they are just keeping it up. I don't believe they mean anything."

But father was not to be put off. Their mother ought to make them respect him and not side in with them against their own father. He was going to know what was going on that they had to whisper about so he could not hear. But he found that demanding confidence and inspiring confidence are vastly different matters. Also, he found to his stupefaction that his boys were grown up. When he undertook to inspect their daily lives they packed their suitcases and left home, not because they had done things they did not want known, but because they simply could not open their hearts to a stranger.

Father still blames mother. The boys blame father. Mother just endures.

DEBORAH.

A Few Strawberries for a Lot of Folks

By LULU G. PARKER

"What cause set free so much of red from heat at core of earth, and mixed such sweets with sour and spice?"

PERFECT strawberries, when served whole with sugar and cream, are fit for kings, without further trimming. But often unexpected company finds only a box or two in the larder, or the fortunate owner of a strawberry patch has not enough at one picking, or the berries are not whole or perfect. Then if a shortcake or some other strawberry way is resorted to, no one will ever guess that the cook had to count the berries to make them go around.

Shortcake has its own variations, but it is far from being the only way to make a little fruit serve a lot of folks when strawberries are high in price or too poor in quality to serve whole.

Strawberry Cake.—Use a favorite layer cake recipe to make three layers. Or make a sponge cake in two rather thick layers. Wash carefully, then hull and crush a pint of strawberries. Drain off some of the juice if there is a great deal, and put the fruit in a cool place or on ice until ready to serve. Just before taking to the table beat the crushed berries into whipped cream, and spread between the layers of cake.

Strawberry Sauce.—(To serve over stale sponge cake or loaf cake, or bread crumb pudding). Beat to a cream one large tablespoonful of butter and one and one-half cups of powdered sugar. Beat the white of an egg to a stiff froth and beat this into the sugar. Beat the whole mixture until very light, then add one pint of crushed strawberries, and serve.

Strawberry Shortcake.—(One quart of berries for eight people). Sift two cups of flour with two teaspoonfuls of baking powder, one-half teaspoonful of salt, and two tablespoonfuls of sugar. Sift several times. Work in one-fourth cup of butter, add gradually three-fourths cup of milk. Turn it onto the molding board, divide into two equal parts, and roll out to fit a cake tin, using the least possible amount of flour to roll. Fit one-half onto the tin, spread lightly with melted butter, and fit the other half on top. Bake in a hot oven. When done the two sections will come apart without cutting. Spread

a quart of crushed strawberries between, placing a few whole berries on top. Serve hot with powdered sugar and cream or strawberry sauce.

Strawberries with Rice.—One pint of strawberries, one pint of boiling water, and a package of prepared gelatine. Wash and pick over the fruit, and save out the prettiest ones. Hull and crush the rest. Prepare the gelatine with hot water as directed on the package. When partially cool, add the crushed and whole berries and pour into a mold to set. Make a nest of cold boiled rice in each sauce plate, heap the jelly in it, and serve with whipped cream.

Strawberry Charlotte.—Put a layer of ladyfingers or stale sponge cake in a glass pudding dish. Make a boiled custard from one quart of milk, yolks of three eggs, and three-fourths of a cup of sugar. Cover the cake with a layer of strawberries, another layer of cake, and so on until the dish is full. When the custard is cool pour it over the cake and berries. Beat the whites of the eggs to a stiff froth with one-half cup of sugar and heap it on top.

Strawberry Pudding.—One-half cup of sugar, two tablespoons of butter, one egg, one cup of sweet milk, two cups of sifted flour, two teaspoonfuls of baking powder, one cup of crushed strawberries. Steam one hour in a pudding dish with a hole in the center.

Sauce for Strawberry Pudding.—Two cups of powdered sugar creamed with two-thirds cups of butter; add one egg beaten very light, and add just before serving one cup of strawberries. This is fine to serve over bread pudding or any steamed or boiled pudding.

Strawberry Roll.—Make a rich pie-crust and roll it out in a long sheet. Mash fresh strawberries with granulated sugar and spread thickly over the paste. Roll up like a jelly roll, pinch down the ends to keep the fruit from running out, and bake in a hot oven. Or tie the roll loosely in a cloth, leaving room for swelling, and steam for one and one-half hours, then serve with cream and sugar.

Strawberry Ice Cream.—One quart of strawberries, one and one-half cups of sugar, one pint and one-half cup of cream. Mash the berries and sprinkle with one cup of sugar. Let stand for one-half hour. Press the fruit through

a coarse sieve or cheesecloth until only the seeds remain. Scald one pint of cream and dissolve in it one-half cup of sugar. When cool add the strained juice. When the mixture is cold turn it into the freezer and freeze to a mush. Add one-half cup of plain cream, beat with the dasher, and freeze hard. When done remove the dasher, scrape the cream from the sides of the can, close the cover and drain off the surplus water. Add more ice and salt, wrap a blanket around the freezer and let stand two hours.

Strawberry Surprise.—Mash a quart of berries to a pulp, add one cup of sugar, one pint of water, the juice of a lemon, and the unbeaten whites of three eggs. Turn into the ice cream freezer and freeze. The turning of the dasher will beat the mixture into a light and foamy "surprise."

Strawberry Ice.—Mash and pound ripe strawberries in a bowl of sugar, using as much sugar as berries. Allow it to stand for several hours, then strain. Mix with one pint of ice water, and one lemon to each pint of berries. Pour it into an ice cream freezer and freeze to a mush.

THE LETTER BOX.

On "Doing Our Bit."

I have never written a letter to a paper in my life, but recently, while reading the letters of Mrs. I. K., and L. C. W. in this department, I felt that I could possibly say a word in defense of Deborah.

While she may not have understood the need of the Red Cross as well as some others, I believe she did understand conditions in the average farm home, and that the majority, a large majority at that, of farm women, feel that they have economized as much as they possibly could.

I am a farmer's wife and have lived on a farm all my life, excepting one year spent in a city. While we have always had a plenty to eat and my husband is considered an extra good provider, I have had to stay at home many times because I did not have what I felt I positively needed to feel presentable, and as for things to work with, have done many a hard day's work because I (or someone else), felt we could not afford what we required to make it lighter. I am not an exception either. I could give the names of dozens of women that I know are situated in the same way.

Deborah's article struck a sympathetic chord in me. Yet I expect, and many others do, too, to "Do Our Bit" for our country which is at war.

I have three strapping sons, two of whom are of draft age and the other one will be should the war continue two years longer. While it may not be in rolling bandages, it will be as essential to have plenty of food, and every farmer's wife, whoever she is, does her bit in providing that.—D. L. D.

SAVE SUGAR IN JELLY MAKING.

Much waste of sugar and spoilage of jellies can be avoided by using a simple alcohol test recommended by the Bureau of Chemistry, United States Department of Agriculture. To determine how much sugar should be used with each kind of juice put a spoonful of juice in a glass and add to it one spoonful of ninety-five per cent grain alcohol, mixed by shaking the glass gently. Pour slowly from the glass, noting how the pectin, the substance in fruits which makes them jelly, is precipitated. If the pectin is precipitated as one lump a cup of sugar may be used for each cup of juice; if in several lumps the proportion of sugar must be reduced to approximately three-fourths the amount of juice. If the pectin is not in lumps but is merely precipitated, the sugar should be one-half or less of the amount of the

juice. If the juice shows no precipitation under this test, it is unsuitable for jelly making and must be combined with apples or other juices rich in pectin. The housewife will do well before making the test, to taste the juice, as fruits not as acid as good tart apples probably will not make good jelly unless mixed with other fruits which are acid.

JOIN THE ARMY!

Once more our national government has issued the call for volunteers to join the colors and assist in putting to rout an enemy to human rights and liberty. Not all of us can enlist in this great service for our country, but there is another service in which we can all enlist, one which means the conservation of a large number of American lives. We can all be volunteers in putting down the insurrection of that greatest of human destroyers, the house fly. To safeguard our own lives and the lives of others against death brought about by disease is no less a duty than the protection of human life against bloodshed.

Therefore, each patriotic citizen should appoint himself a committee of one to aid in the crusade against the most dangerous of human foes, the most persistent and pestilential, the common house fly. We shrink at the thought of an encroaching conquering army, devastating our land and leaving a trail of waste and desolation, but the armies of flies have hurled themselves onto humanity, in all their death-dealing defiance and violence for countless centuries.

The first fly of the season, having hid in crack and crevice during the winter, like the sneak thief or the spy hides from his prey, gets on the job early, and is responsible for the millions of its progeny that make life a torment to humanity in warm weather. It is not enough to merely drive it out of doors, where it may find a place to propagate a myriad of other flies, but it should be killed and burned. There is no time like the present to get busy in this loyal service.—Michigan State Board of Health.

HOME QUERIES.

In answer to the inquiries for making soap I will give you the recipe for the way we farmers make our soap. The old way is too slow. You can use any kind of grease or cracklings, but tallow is very good, too. Be very particular about measure. Two cans of lye, half pound of borax, quarter of a pound of rosip, seven pounds grease, seventeen quarts of soft water. Boil slowly for one hour. This soap will be white and hard to the bottom. Will dissolve grease as well as store soap, and will not hurt the most delicate hands. The better the grease or tallow the finer the soap. You can perfume it, too.—Mrs. M. A. L., Midland.

Household Editor.—I have read your paper for more than twenty years and have derived many useful ideas. But of course I do not agree with everything published under "Woman and Her Needs." I take what I need or agree with and leave the rest. Here is something that is worth passing along. Try covering the shelves of your oil stove ovens with white cloth, have one burner lighted, but turned down, and put fruit or vegetables on these to dry. It is far ahead of drying around the stove or in the sun. Often in early winter I dry apples by setting the oven over the register. At night slice the shelves full and you will be happily surprised in the morning. Just a word for the water seal canner. I have one and the fruit is far ahead of any canned in the old way. We have canned meat this way for several years.—Mrs. J. W. P.

S. C. W., Lansing:—Write the Department of Agriculture at Washington and ask them for a remedy.



To Keep Your Milk Cans Scientifically Clean Use

20 Mule Team Borax. Whether you ship whole milk or deliver at the creamery, it will pay you to keep your milk cans sweet and germ proof. This Borax will do it. It is a harmless antiseptic and cleanser. Use it when you clean your separator. In both laundry and kitchen you will find constant use for

20 MULE TEAM BORAX

It makes the clothes white—saves scrubbing—helps the soap do its best work. Sprinkle some in the water when you wash your dishes—it cuts the grease and puts a shine on your china and glass ware. In the bath tub, 20 Mule Team Borax cleanses the pores, refreshes the skin and kills perspiration odors.

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Soap in chip form. Saves you soap cutting. Blended in the right proportions, one part Borax to three parts pure soap. Not a substitute for Borax but a time, labor and money saver that will pay you to use every wash day. See the picture of the famous 20 Mules on each of the above packages. Sold by all dealers.

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DETROIT

MICHIGAN FARMER PATTERNS.

Be sure to give proper pattern number and size of pattern desired. Address all orders for patterns to The Michigan Farmer, 39-45 West Congress Street, Detroit, Mich.



No. 2133—Girls' Dress. Cut in 4 sizes, 8, 10, 12, 14 years. Size 10 requires 4 1/4 yds. of 44-in. material. Price 10c.

No. 1743—Junior Dress, with Under Waist. Cut in 3 sizes, 12, 14, 16 years. It requires 1 1/4 yds. of 27-in. material for the under waist, and 5 1/2 yds. for the dress for a 14-year size. Price 10c.

No. 1963—Ladies' Apron. Cut in 4 sizes, 34, 38, 40, 36 in. bust measure. Size 38 requires 5 1/4 yds. of 36-in. material. Price 10c.

No. 2140—Ladies' Dress. Cut in 6 sizes, 34, 36, 38, 40, 42, 44 in. bust measure. Size 36 requires 7 yds. of 36-in. material. The skirt measures about 2 1/2 yds. at the foot. Price 10c.

No. 2158—A Practical Undergarment. Cut in 4 sizes, small, 32-34; medium, 36-38; large, 40-42; extra large, 44-46 in. bust measure. Size medium requires 3 1/4 yds. of 36-in. material. Price 10c.

No. 2144—Ladies' House Dress. Cut in 7 sizes, 34, 36, 38, 40, 42, 44, 46 in. bust measure. Size 36 requires 6 1/4 yds. of 36-in. material. The skirt measures about 2 1/2 yds. at the foot. Price 10c.



Markets.

GRAINS AND SEEDS.

July 10, 1917.

Wheat.—The embargo placed upon the grain markets as a preliminary to the control of the grain output of the country by the government, was influential in cutting the volume of wheat trading to small quantities and prices took a drop from the closing figures of last week. There is much difference of opinion as to the permanent effect of the embargo upon values, some contending that it will serve to enlist additional tonnage for the movement of grains which should be especially helpful in the wheat circle. The probable harvest of wheat in America will be close to that of last year when a short yield was secured. One year ago No. 2 red wheat sold for \$1.12½ per bushel. Last week's Detroit quotations were as follows:

	No. 2 Red.	No. 1 White.	Sept.
Wednesday	2.40	2.35	2.07
Thursday	2.40	2.35	2.12
Friday	2.40	2.35	2.12
Saturday	2.35	2.30	2.10
Monday	2.30	2.25	2.05
Tuesday	2.25	2.20	2.05

Chicago.—July \$2.03½; Sept. \$1.91.

Corn.—Contrary to expectation corn was little affected by the embargo news. During the week this grain experienced a bull market and established new high records in some markets. Favorable weather for the crop, and the embargo, will undoubtedly cause easier prices. One year ago the price for No. 3 corn was 81c per bushel. Last week's Detroit quotations were:

	No. 3 Mixed.	No. 3 Yellow.
Wednesday	1.79	1.81
Thursday	1.80	1.82
Friday	1.80	1.82
Saturday	1.85	1.87
Monday	1.85	1.87
Tuesday	1.86	1.88

Chicago.—Sept. \$1.57½ per bushel; Dec. \$1.21½.

Oats.—The market for this grain during the week was steady and had an upward tendency. The movement of this grain has been light and the demand well sustained. The government figures for the coming crop was larger than the dealers expected but this bearish factor did not affect prices any. One year ago standard oats sold at Detroit for 44c per bushel. Last week's Detroit quotations were:

	No. 3 Standard.	No. 3 White.
Wednesday	74½	74
Thursday	74½	74
Friday	75	74½
Saturday	75	74½
Monday	75	74½
Tuesday	75½	75

Chicago.—July 66½c; Sept. 55½c.

Rye.—Prices have suffered a further decline and cash No. 2 is quoted at \$2.20 per bushel.

Beans.—A demand for beans was in evidence after a long period of quietness. The market was firm with local quotations at \$8.60 for immediate and prompt shipment and \$6.60 for October. At Chicago Michigan hand-picked pea beans are quoted at \$8.75@9.

Seeds.—Prime red clover \$11; October \$11.60; alsike \$11.20; timothy \$3.60.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$13.40; seconds \$13; straight \$12.80; spring patent \$13; rye flour \$13 per bbl.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$36; standard middlings \$42; fine middlings \$45; cracked corn \$71.50; coarse corn meal \$69; corn and oat chop \$58 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$17.50@18; standard timothy \$16.50@17; No. 2 timothy \$15.50@16; light mixed \$16.50@17; No. 1 mixed \$14.50@15; No. 1 clover \$13.50@14.

Pittsburg.—No. 1 timothy \$17.75@18.25; No. 2 timothy \$15.50@16; No. 1 light mixed \$15.50@16.50; No. 1 clover mixed \$16@16.50; No. 1 clover \$16@16.50.

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

DAIRY AND POULTRY PRODUCTS.

Butter.—The market is quiet, and without much change in prices. Fresh creamery firsts are offered at 36½c, and bid at 35½c.

Elgin.—The market has developed unexpected strength on account of considerable buying for storage. Prices are 1c higher. Price, based on sales is 37½c.

Chicago.—The feeling is firm and the recent advance is well maintained. Extra creameries 37½c; extra firsts 37c; packing stock 30½@31½c.

Eggs.—The feeling is firm with prices higher. Fresh firsts were bid at 34c per dozen and offered at 34½c.

Chicago.—The feeling is steady and prices are slightly higher. The demand is for the best lots. Fresh firsts 30½@31½c; ordinary firsts 28½@29½c; miscellaneous lots, cases included 27@31½c.

Poultry.—Market is firm with prices higher. No. 1 hens 21@22c; small and medium do 19@20c; best broilers 30@32c; Leghorns 26@27c; ducks 22@23c; spring ducks 26@27c; geese 15@16c; spring geese 20@22c; turkeys 24@25c.

Chicago.—The market is quiet, with fowls slightly higher and broilers lower. Fowls 18½c; roosters 15c; broilers 1½@2 lbs, 27@28c per lb; ducks 12@18c; spring ducks 20c; geese 12@14c; spring geese 16@18c; turkeys 12@18c.

Dressed Calves.—Market at Detroit steady. Fancy 20@21c; No. 2, 17@18c per lb.

Chicago.—The market is dull and lower; 50@60 lbs. weight 16½@17½c; 60@80-lb. weight 17½@18c; 90@100 lbs. 18½@19½c.

FRUITS AND VEGETABLES.

Strawberries.—Home-grown berries are quoted at \$5.50 per bushel. At Chicago the market is good. Prices range from \$1.50@2.50 per 16-qt. case, depending on the quality.

Other Fruits.—Gooseberries \$3 per 24-qt. case. Sour cherries \$3@3.50 per bushel. At Chicago gooseberries sell at \$1.25@1.50; cherries \$1.25@1.75 per 16-qt. case.

WOOL.

This market has been comparatively quiet because of awaiting of government action regarding the control of this commodity. The government is doing everything to discourage speculation and manufacturers are doing little buying. For the present the mills seem well supplied. Prices remain high and firm as the general supply on hand is not large and will be wanted. At Boston Michigan unwashed delaines were quoted at 67@68c; do combing 68@72c; do clothing 54@62c per pound.

GRAND RAPIDS.

The strawberry season is pretty well over and has been shorter than usual, with berries of good quality and as a rule bringing good prices. Cherries come next and this crop will also be light. There are good prospects for raspberries. Fresh eggs are quoted at 30@31c; dairy butter at 32@33c; in grain the mills are quoting No. 2 red wheat at \$2.05; rye \$1.50; corn \$1.60; oats 70c. Beans are quoted on a \$7.50 basis to farmers.

LIVE STOCK MARKETS.

July 9, 1917.

Buffalo.

Receipts here today as follows: Cattle 176 cars, including 11 cars held over; hogs 50 d. d.; sheep 7 d. d.; calves 1400 head.

Shipping cattle today were strong to a shade higher. Nothing sold over \$13.50, but there were no strictly top steers here. Some prime would have made \$13.75. The good weight shipping steers off grass were taken at firm prices to fill the shortage of dry-fed stock. The common butcher steers showed a decline of about 25c, while the little, slippery steers and heifers had to stand a take off of around 25@40c. Choice fat cows were firm and wanted. Bulls easier; stockers and dairy cows were about steady.

Hog supply was rather light today, showing a total of about 50 double decks. Demand was rather limited, and with a big run at Chicago and prices considerably lower, our market showed a loss of from 10@20c on all but pig weights; this class ruling a quarter higher than Saturday's best time. A few loads of selected hogs sold at \$16.25@16.35, with one fancy lot at \$16.40; bulk of the sales from \$16@16.15; pigs and lights generally \$15.50; roughs \$14@14.25; stags \$12@13. Market closed extremely dull and a number of loads going over unsold. Outlook is not very encouraging for the next few days.

With a light run of lambs today our market opened up active and prices \$1 higher than the close of last week. All sold and we look for steady prices the balance of the week, depending on the receipts.

We quote: Spring lambs \$16@16.50; wethers \$10@10.25; yearlings \$13@14; ewes \$9@9.50; cull to common lambs \$10@13; bucks \$7@8; best calves

\$15.75@16; common and light calves \$10@15.50; heavy \$8.50@13; grassers \$6@6.50.

Chicago.

July 9, 1917.

Cattle. Hogs. Sheep.

Receipts today. 18,000 50,000 10,000
Same day 1916. 17,714 40,314 18,996
Last week. 39,254 102,393 38,164
Same wk 1916. 37,518 120,414 73,132

This week opens with an active demand for cattle at strong prices, and the best sell a dime higher. Forty head of prime South Dakota steers, averaging 1692 lbs. brought \$14, breaking all past records. Hogs average fully 25c lower, with the best selling at \$15.80. Hogs received last week averaged 230 lbs., showing a further gain. Lambs are 25c or more lower today, with the best going at \$16.25. Some range yearlings, the first of the year, sold at \$11.50.

GOVERNMENT CROP REPORT.

A summary of the July crop report for the state of Michigan and for the United States, as compiled by the Bureau of Crop Estimates (and transmitted through the Weather Bureau), U. S. Department of Agriculture, is as follows:

Corn.—State.—July 1 forecast, 54,500,000 bushels; production last year (December estimate), 45,375,000 bu. United States.—July 1 forecast, 3,120,000,000 bushels; production last year (December estimate), 2,583,241,000 bushels.

All Wheat.—State.—July 1 forecast, 13,400,000 bushels; production last year (December estimate), 13,600,000 bushels.

United States.—July 1 forecast, 678,000,000 bushels; production last year (December estimate), 639,886,000 bu.

Oats.—State.—July 1 forecast, 54,100,000 bushels; production last year (December estimate), 42,690,000 bu.

United States.—July 1 forecast, 1,450,000,000 bushels; production last year (December estimate), 1,251,992,000 bushels.

Barley.—State.—July 1 forecast, 3,090,000 bushels; production last year (December estimate), 2,450,000 bu.

United States.—July 1 forecast, 214,000,000 bushels; production last year (December estimate), 180,927,000 bu.

Rye.—State.—July 1 forecast, 5,160,000 bushels; production last year (December estimate), 4,648,000 bushels.

United States.—July 1 forecast, 56,100,000 bushels; production last year (December estimate), 47,383,000 bu.

Potatoes.—State.—July 1 forecast, 37,000,000 bushels; production last year (December estimate), 15,360,000 bushels.

United States.—July 1 forecast, 452,000,000 bushels; production last year (December estimate), 285,437,000 bu.

All Hay.—State.—July 1 forecast, 3,390,000 tons; production last year (December estimate), 4,423,000 tons.

United States.—July 1 forecast, 103,000,000 tons; production last year (December estimate), 109,786,000 tons.

Apples (Agricultural Crop).—State.—July 1 forecast, 3,817,000 barrels of three bushels; production last year (December estimate), 4,160,000 bbls.

United States.—July 1 forecast, 66,800,000 barrels of three bushels; production last year (December estimate) 67,415,000 barrels.

Last year about 34 per cent of the total state crop and 38 per cent of the United States crop were estimated to be "commercial" (i. e., shipped out of county where grown). This year about 38 per cent of the state crop and 37 per cent of the United States crop are estimated tentatively to be "commercial."

Peaches.—State.—July 1 forecast, 820,000 bushels; production last year (December estimate), 2,010,000 bu.

United States.—July 1 forecast, 43,500,000 bushels; production last year (December estimate), 36,939,000 bu.

Beans.—State.—Production last year (December estimate), 3,102,000 bu.

United States. (five states).—Production last year (December estimate) 10,461,000 bushels.

Prices.—The first price given below is the average on July 1 this year, and the second the average on July 1 last year.

State.—Wheat, 214 and 98c per bu; corn 164 and 77; oats 73 and 40; potatoes 244 and 96; hay \$14.10 and \$13.60 per ton; eggs 29 and 20c per dozen.

United States.—Wheat 220.1 and 93.0c per bu; corn 164.6 and 75.4c; oats 68.9 and 40.4c; potatoes 247.9 and 102.3c; hay \$14.56 and \$12.09 per ton; cotton 24.7 and 12.5c per pound; eggs 28.3 and 19.7c per dozen.

A special session of the New York state assembly will be called July 16 to enact a food bill to conform to the provisions of the federal measure.

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.

July 12, 1917.

Cattle.

Receipts 1710. The market opened steady at last week's prices, closed 10 @15c lower.

Best heavy steers \$10@11.25; best handy weight butcher steers \$9@9.75; mixed steers and heifers \$8@9; handy light butchers \$7@8; light butchers \$6.50@7; best cows \$7.50@8; butcher cows \$6.50@7; common cows \$6@6.50; cannors \$5@5.50; best heavy bulls \$8; bologna bulls \$7@7.50; stock bulls \$6@7; feeders \$8@9; stockers \$7@8; milkers and springers \$50@90.

Bishop, B. & H. sold Parker, W. & Co. 15 butchers av 672 at \$7.75, 1 bull wgh 920 at \$7, 13 steers av 720 at \$7.50, 14 do av 830 at \$8, 1 cow wgh 1160 at \$5.50, 3 do av 703 at \$6.50, 4 butchers av 900 at \$8; to Hammond, S. & Co. 11 steers av 984 at \$9.75, 21 do av 1043 at \$10.65; to Bresnahan 3 cows av 700 at \$5.50, 2 do av 1040 at \$7.50; to Bordine 6 feeders av 808 at \$8; to Brighton D. M. Co. 5 cows av 970 at \$7; to Breitenbeck 23 steers av 941 at \$9.10, 2 do av 910 at \$8; to Heyman 5 butchers av 542 at \$7; to Heinrich 2 steers av 1025 at \$9.50; to Hammond, S. & Co. 9 cows av 825 at \$6; to Goodgold 12 steers av 750 at \$7.80; to Parker, W. & Co. 2 bulls av 880 at \$7; to Mich. B. Co. 22 steers av 1042 at \$11.25, 8 do av 786 at \$7.50, 4 do av 975 at \$7.50; to Sullivan P. Co. 7 do av 886 at \$8.35.

McMullen, K. & J. sold Kamman B. Co. 1 steer wgh 1250 at \$9.50, 23 do av 861 at \$8; to Parker, W. & Co. 4 do av 887 at \$7.50, 10 do av 850 at \$7.50; to Applebaum 11 butchers av 652 at \$6.65; to Sullivan P. Co. 4 steers av 837 at \$8, 2 cows av 1030 at \$6.50; to Parker, W. & Co. 10 steers av 845 at \$7.75; to Bray 2 cows av 835 at \$5.10, 21 do av 830 at \$5.75; to Kamman B. Co. 25 steers av 1032 at \$9.50, 4 do av 1000 at \$9.50; to Mason B. Co. 4 do av 1100 at \$9.50; to Bresnahan 6 cows av 925 at \$6.25.

Sandel, S. B. & G. sold Applebaum 5 butchers av 710 at \$6.40; to Sullivan P. Co. 15 do av 880 at \$7.75; to Mason B. Co. 8 do av 909 at \$8, 7 do av 713 at \$8, 2 steers av 1135 at \$8.75, 1 bull wgh 1100 at \$7; to Fineman 11 butchers av 845 at \$6.85; to Goose 1 heifer wgh 450 at \$6, 2 cows av 825 at \$6.65, 3 do av 763 at \$6.65; to Benjamin 1 do wgh 1050 at \$5.75, 5 stockers av 460 at \$6.25; to Baker 4 do av 417 at \$8, 1 steer wgh 1120 at \$7.25; to Goodgold 3 cows av 810 at \$6.85; to Garber 7 butchers av 850 at \$7.25, 2 cows av 957 at \$6, 4 butchers av 767 at \$7; to Thompson 6 do av 1028 at \$8.50; to Sullivan P. Co. 3 bulls av 1137 at \$7, 7 butchers av 910 at \$7.75; to Mason B. Co. 3 do av 1023 at \$9; to Hamilton 2 stockers av 730 at \$7.10; to Lardlow 8 steers av 744 at \$6.50; to White 3 do av 783 at \$6, 6 do av 1000 at \$7.25; to Sullivan P. Co. 12 do av 850 at \$7.25; to Jones 2 do av 740 at \$7.50; to Goose 9 butchers av 700 at \$6.85, 3 do av 703 at \$6.25; to Mason B. Co. 21 do av 783 at \$6.90.

Veal Calves.

Receipts 747. Market opened steady but closed slow, with prices fully \$1 lower than at opening. Best \$15@15.25; others \$8@14.

Erwin, S. & J. sold Thompson 2 av 155 at \$15, 7 av 180 at \$15, 2 av 130 at \$12; to Nagle P. Co. 3 av 215 at \$14.50, 4 av 210 at \$15.25, 9 av 165 at \$14.75; to Thompson 12 av 160 at \$15.25; to Nagle P. Co. 7 av 185 at \$15.25, 3 av 160 at \$12, 6 av 145 at \$15.25, 5 av 120 at \$12.50, 27 av 180 at \$15.

McMullen, K. & J. sold Parker, W. & Co. 13 av 160 at \$15.25, 11 av 160 at \$14.50, 15 av 180 at \$14, 23 av 190 at \$15.

Sheep and Lambs.

Receipts 346. Market slow, generally 25@50c lower than last week. Best lambs \$15.50@16; fair lambs \$14@15; light to common lambs \$11@13; yearlings \$12.50@13.50; fair to good sheep \$8@8.50; culls and common \$7@8.

Bishop, B. & H. sold Sullivan P. Co. 5 sheep av 115 at \$8; to Mich. B. Co. 47 lambs av 69 at \$16, 9 do av 75 at \$16.50, 5 do av 72 at \$16.50, 10 do av 78 at \$16.25, 7 sheep av 110 at \$8, 22 yearlings av 75 at \$13; to Nagle P. Co. 10 sheep av 116 at \$8.25, 20 do av 110 at \$8.50, 11 lambs av 50 at \$15; to Mich. B. Co. 19 do av 65 at \$16; to Thompson 38 do av 75 at \$15.75, 51 do av 73 at \$15.75.

Hogs.

Receipts 1909. Market 20c higher than on Tuesday. Pigs \$14.50@14.75; mixed \$15.25@15.60.



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Teaching Canning Methods

THE canning campaign recently carried on in St. Clair county constituted one of the most important and profitable developments in the history of county agent work in that locality. Eight cold-pack canning demonstrations were held, with a total attendance of 568 women.

The demonstrations were in charge of Miss Clara Morris of the Agricultural College, assisted by Miss Alice Dolby, M. A. C. 1917, of Mt. Clemens. At each place, as soon as the equipment could be arranged, the meeting was called to order and as the vegetables and fruits were being made ready and put into the cans, Miss Morris explained each step in the process. This included the preparation of the products, blanching in boiling water to remove injurious organisms and substances, followed by the cold dip, packing, and sealing the cans, the manner of placing in the canner, etc. She also took up a discussion of the different types of cans, showing the precautions to be used with each and the proper adjustment of the covers, bails, and rubbers. Beans, peas, carrots, beets, asparagus, rhubarb, strawberries and pineapples were the vegetables and fruits canned. Several products, such as corn, of course, were out of season at this time, but the preserving of these was carefully explained so that everyone present could care for them satisfactorily as they became available throughout the summer. The various kinds of canners, too, were described, and the advantages of each mentioned. With the canning done at these meetings, however, only ordinary household utensils were used, such as oyster cans, wash boilers, tin pails, and the like. The lecturer stated that these were efficient but that the special canning outfits required less work. Her idea in using them was to impress upon the people that it was not necessary on the start to purchase expensive canners.

While some of the meetings were a

considerable distance apart, and rain and slippery roads offered some hindrance, the whole schedule was carried out without a hitch. This was largely due to the complete preparations made by the women who opened their homes, to the work of other community leaders in charge of local arrangements, and to the splendid co-operation of everyone present at the different sessions. Then, coupled with all these favorable conditions, was the industrious and whole hearted manner in which the demonstrators entered into their part of the work. About three hours were required for each demonstration. A total of 486 people registered their names.

One of the most pleasing features of this campaign was the large number of those attending who were looking at the work from a patriotic standpoint, and who were taking notes with a view to interesting others and demonstrating the methods to those who were not present. There are over 4000 farm homes in St. Clair county, and 500 seems like a small proportion of the total, yet if each person will only show a few of her neighbors and induce them to take up the work, it will rapidly spread over the county, and play no small part in providing an adequate and healthful supply of food for next winter. It is gratifying to know that many are planning to do this.

Still another notable result of the practical and clear manner in which this work was presented is the awakened interest on the part of the women of St. Clair and adjoining counties in projects other than canning that are being developed by the Michigan Agricultural College, and the people of several localities are now applying to the Extension Director at East Lansing for a four-day home economics course covering all phases of household management, including food principles, cooking, sewing, textiles, home decorations, and care of the sick, to be held in each of their communities next winter.

Success from the Start

The following report covers the first fifteen months' business of the Square Deal Co-operative Association of Eaton county.

During this time we have shipped 228 decks of stock totaling 16,611 head, of which 1,233 were cattle, 8,475 were hogs, 6,187 were sheep, and 716 veal calves. Sixty-five per cent, or practically two-thirds of all the veal calves shipped have sold for top price the day they were on the market. The total number of individual shipments made in this time was 2,454, of which 962 were by non-members of the company. The money value has averaged \$1,379.33 per deck, totaling \$314,500. Our members have received as high as \$15.52 for hogs, \$13.70 for lambs and \$13.65 for veal calves. These prices were net on home weight with shrinks and expenses deducted and so far as we know are records in this locality. We have had dry cows bring \$10 per cwt, heifers \$11 and steers \$11.25. Fat ewes in one shipment sold for \$12.75 and netted \$11.45 on home weight. All the sows in one shipment sold straight at \$14.50 per cwt., and the stags in the same load sold, with 80 pounds off, at \$14.75 per cwt.

Sixty-five shipments were made in the fifteen months and averaged three and one-half decks a week. We shipped sixty-four decks of stock during one sixty-day period last fall, ten decks being the largest number sent in one day.

Our checks are all sent by mail and some weeks as many as seven different post offices besides Charlotte are on the list, which shows how an association of this kind brings people here

that would not otherwise come. Some of our members live within two miles, or less, of other towns and draw their stock fifteen miles to get the benefits of a co-operative association.

The four other towns mentioned in the above referred to article now have successful co-operative shipping companies. Two of these places got a wrong start but have reorganized and are now following a plan that will lead them to success. At Bellevue, in addition to the live stock shipping they have been operating an elevator on the co-operative plan and with very satisfactory results. A similar company has been formed at Vermontville and one here, and expect to be doing business before another grain season.

Eaton Co. C. H. KIPLINGER.

SILAGE TO SAVE PASTURE.

An Iowa stock feeder marketed the last of his drove of 1,200 head of cattle in Chicago about the middle of last May, stating that he would not have sold them before next September had the price of feed been anything like normal. He said his money would be safe in the bank and his pastures growing corn all the summer. Here is where a silo would have come in handy. Early in May two stock feeders showed up on the Chicago market at the same time. One of them sold a shipment of 300 head of half-fat cattle because he had used up all of his feed; while the other man was not in the least concerned about feed, as he had plenty of silage to carry him through the between hay and grass period. It is certain that had the owners of thousands of yearlings which were sacrificed weeks or months ago had enough silage, such sacrifices would not have been made.

Farmers' Clubs

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

SPECIAL CLUB FEATURES.

At this season of the year, many Farmers' Clubs are arranging for special feature meetings, such as picnic or recreation meetings, Club fairs, etc. We shall be glad to publish notices and brief reports of such meetings in this column. If particular interest will be new features of meetings or programs which will be of interest to the members of other Clubs and of value as object lessons in the conduct of other Clubs. Corresponding secretaries of local Clubs will be doing good missionary work for the Club movement by promptly reporting such items of interest as are above noted.

CLUB DISCUSSIONS.

An Auspicious Beginning for this New Club.—The second meeting of the Kimball and Wales Farmers' Club of St. Clair county, was held at the County Farm at Goodells. That the organization is enjoying a rapid growth was shown by the fact that the attendance had nearly doubled as compared with that of the first meeting held a month ago, it being necessary to spread tables for 125 plates in order to accommodate the crowd that had assembled. President Cowles called the meeting to order, and the program was opened with patriotic songs, followed by prayer led by Elder Riley, of Goodells. After the secretary, Mrs. George King, read her report, new members were called for, and twenty of the leading families were enrolled.

This Club has adopted the old practice of appointing a viewing committee, and the report of the chairman, Avery Schenck, complimented Mr. and Mrs. Cowles very highly on the condition of the buildings and farm. As a viewing committee for the next meeting, Isaac Green, Arthur Campbell and John Green were appointed by the president, and Mrs. Harvey Hubble, Arthur Fish, Earl Lewis and Mrs. Chas. Stevenson were named to provide a place of entertainment.

Elder Riley gave an able address on "Sociability." He praised the Farmers' Club as an agency in getting the people together every month, and stated that this was especially important during this time of national crisis. His remarks were characterized throughout with patriotism and loyalty, and the hearty applause given the minister showed that his efforts were well appreciated.

A. E. Stevenson was called upon to address the meeting on the Red Cross. He urged the people to stand behind the soldiers, doctors and others at the front, and for an hour made one of the strongest appeals for the support of the Red Cross that has yet been delivered in the county. When the call for subscriptions was made, the Wales people showed that they were by no means going to be left behind by the other townships regarding the amount of their contributions.

The county agent explained the spraying of potatoes with Bordeaux mixture for the prevention of blight, laying special emphasis upon Red Rock wheat and Rosen rye. A number of farmers present will obtain considerable quantities of these grains for fall seeding.

Mrs. Charles King, of Port Huron, also gave a short talk in which she traced the history of the old Kimball and Wales Club, and told of the early struggles in its existence. She congratulated the new Club on the fact that it was making a bigger success than the old one, and everyone present was very glad to hear and have present one of the earliest pioneers in the Farmers' Club movement of St. Clair county.

The matter of holding a county picnic was discussed, and a motion by A. E. Stevenson recommending that the other Clubs and organizations join in the county picnic annually held at Smith Creek, and also that no meeting be held in July, and that the county picnic be allowed to take the place of the August session of the Club, was carried.

Throughout the afternoon, many pleasing selections were rendered by the Goodells Choir, and the singing of the "Star Spangled Banner" constituted a most appropriate closing number.

Grange.

WEEK OF GRANGE ACTIVITY IN MASON COUNTY.

The week spent by Mrs. Dora Stockman, State Grange Lecturer, in Mason county, was one productive of abundant and far-reaching results. She began Monday with a visit in Grant township, in response to a call for help to re-organize the old Fruit Ridge Grange, and spent the afternoon there in individual work.

Monday evening, in company with County Commissioner C. A. Rinehart, she met with Sauble River Grange at Freesoil. This Grange has a live membership and the women were especially interested in the proposition to start a co-operative canning and thrift club.

Tuesday was the date of the Mason county Pomona meeting at Scottville. There was a representative attendance of members from all over the county, giving Mrs. Stockman opportunity to hold a profitable lecturer's conference, and at the open lecture hour meeting in the afternoon to tell a large number of non-grangers who came in to hear her, of the benefits of the Grange and of the preparedness work she was advocating in the way of increased production, conservation and of knitting and providing outfits for the soldiers going from home.

This meeting was one of unusual interest and profit. A new impetus was given to lecture work through the conference; many learned that the Grange has a power and scope in rural affairs such as they had not dreamed of. Members were there from subordinate Granges who had never attended a Pomona meeting and will be initiated in the fifth degree at the September meeting. R. V. Tanner, county agricultural agent, was appointed captain with instructions to organize and train a degree team in time for that meeting. The slogan was adopted, "A hundred new Pomona members by September," and there are workers in each subordinate Grange plugging now for those hundred members. As an expression of the deep feeling aroused by Mrs. Stockman's address, resolutions were passed by the assembly pledging hearts and hands to the support of the government in this time of stress.

Wednesday evening, in spite of the exceedingly bad weather there was a large attendance of Victory and Hamlin grangers. This meeting was held at the home of Mr. and Mrs. W. E. Lumsden, who have a large farm house and freely open it for the use of the Grange.

Thursday the weather again interfered with the work, but Friday evening a joint meeting of Amber and Harmony Granges, held with Harmony Grange was largely attended and a class of thirteen new members initiated in the first and second degrees by a newly trained degree team from Amber Grange.

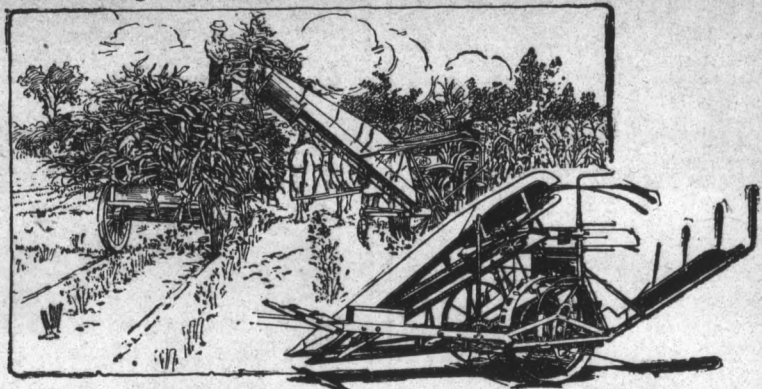
Saturday afternoon Mrs. Stockman spoke at the eighth grade graduating exercises where probably a thousand people from every part of Mason county were gathered. The day was clear and her voice carried well over the large audience. Here she emphasized the need of the study of food values, the need of strong, well-poised bodies to use the education gained, the value of the carefully prepared, well balanced school lunch.

Saturday evening Mason Grange, in West Summit, played host to a joint meeting of Pere Marquette, Summit and Mason Granges, at the fine hall which they own as a Grange home. Mason grangers, under direction of Mrs. William Currott, their lecturer, put on a brief but very fine patriotic program as a preface to the lecture, in which they complimented Mrs. Stockman by giving a beautiful presentation of her pantomime, "The Red, White and Blue."

At all of these meetings the lecturer presented the merits of the Grange organization, giving its history and piling up facts and arguments in such a manner as to excite the keen interest and admiration of her hearers, especially of the men in her audiences.

She urged upon all to use this well-established, well-furnished organization to meet the present needs of the nation—to further food production, food conservation and concerted action in the work of outfitting the home boys going to the front, with warm knitted socks, scarfs, caps, wristlets and comfort bags.

In all her work in Mason county Mrs. Stockman had the active co-operation of the county agricultural agent, the county school commissioner and the press.—Grace Tillson Smith.



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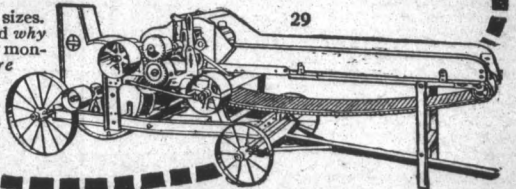
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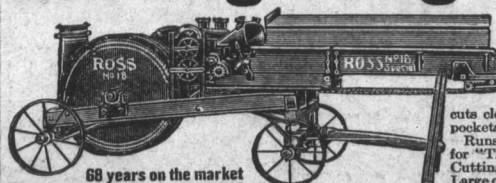
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S. C. White Leghorns from prize winning laying stock. Fine for breeding. \$17 for 12, \$32 for 25, \$60 for 50, \$120 for 100. Catalog free. Stamps appreciated.
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Bulls by BLACK QUALITY ITO, sire. 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.
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Stock always for sale. May Rose Strain—Herd Tuberculin tested annually. Never had a reactor—no abortion. J. M. WILLIAMS, North Adams, Mich.

Guernsey Bull Calves From Imported and American bred dams of high producing ancestry. Cash or bankable note. Or would exchange for bred gilt or yearling boar large type Duroc swine. G. A. Wigen, Watervliet, Mich.

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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, Fort Huron, Mich.

Poultry Query Department**Curing Gapes.**

I would like some information about treating gapes in chickens. I always have them among my chicks but have treated it quite successfully with lime, but I can not get the pure lime from our dealers as they keep nothing but some patent substance. If you can give me some treatment for the disease I shall be very grateful.
Van Buren Co. C. A. B.

The following is a very good method of curing gapes: Isolate all affected birds so that the worms or ova coughed up or voided with the excrement may not be eaten by other chicks or contaminate the food or ground of the runs. All birds dying from the disease should be burned. The feed and water troughs should be thoroughly scalded, and the houses and coops disinfected. Permanganate of potash should be used in the drinking water.

For ridding the ground of infection, spread air-slaked lime or sprinkle the ground with one or two per cent of sulphuric acid or two ounces of copers dissolved in a pail of water.

For individual treatment, the best method is to take two straight hairs from a horse's tail, which should be tied together in a knot and the ends cut off close to the knot. This should be passed straight down the windpipe as far as it will go without bending, then twisted between the finger and thumb and drawn out. A trial or two may miss, but several attempts will usually bring up quite a few worms.

Wire worm extractors may be purchased from dealers in poultry supplies, or one can make one for himself by using No. 3 wire. A loop just large enough to go down the trachea should be formed at one end. All worms removed should be burned.

The permanganate of potash recommended for the drinking water should be made into a saturated solution, that is, dissolving in water all that it will take up, and using from one to two teaspoonfuls of this stock solution to ten quarts of water.

Crop Bound.

We have a hen that seemed somewhat dumpy and on making investigation found that she was much poorer than ordinary, although her crop was full as it could be. Queer, too, as though it were indigestion. It stays just about so full and the hen doesn't seem to eat anything at all. We have given two doses of linseed oil, with some results. Could you tell me what the ailment is, the cause and remedy?
Hillsdale Co. A. I. M.

Undoubtedly your hen is crop-bound. This condition may be caused by the over-distention of the crop with dry grain, or the opening in the lower portion of the esophagus may have become clogged with straws, feathers or other substances.

A tablespoonful of castor oil will very often relieve this condition. After allowing the oil to work into the crop, begin to knead the hard mass. After the mass has been softened, hold the bird with the head downward and attempt to work the contents of the crop out through the mouth.

Occasionally it will be necessary to open the crop to relieve the bird. To do this, the bird should be either tired down to a board, or held by another person. First pluck out a few feathers in the median line of the crop, and the feathers close to where the cut is to be made should be dampened in order to keep the dust from them getting into the wound.

With a clean, sharp knife cut through the skin over the middle of the crop, making the cut about an inch long. Then make an incision of three-quarters of an inch through the crop wall. The distention of the crop will cause this wound to open, then with a buttonhook or blunt pointed scissors the contents can be removed. After this is done, run the finger into the crop to make sure that everything has been removed.

The crop should then be washed out with clean, warm water about 110 degrees F., and the wall of the crop closed with three or four stitches, making each stitch by itself, tying a knot that will not slip. The same should be done to the cut in the skin. White silk is the best for this purpose.

Very often this trouble becomes chronic, due to the muscles of the crop becoming paralyzed, and if that is the case, it will be useless to treat the bird.

Ptomaine Poisoning.

Can you tell us what is the matter with our hens? We have a small flock on a farm. The hens are in good flesh and have the run of the yards. The first symptoms of trouble are lameness. They eat well but sit around. In about a week they refuse to eat, can't walk and die in a day or two. We have lost one-third of our flock. Can you give a remedy?
J. I.

Your hens are suffering from ptomaine poisoning. This is caused by the eating of decayed food, which is very likely to occur during wet weather such as we have been having.

When feeding, make sure that the chickens clean up entirely all the food before the next feeding, in fact, it is best to have them clean up all the grain within an hour after feeding, and if wet mashers are fed, they should be cleaned up within half an hour.

It is rarely advisable to treat sick chickens, but if started when the symptoms are first noted, a teaspoonful of castor oil will have a beneficial effect. This should be followed by one-fifth grain of sulphate of strychnine every five hours.

CULLING THE PURE-BREDS.

One of the reasons some farmers are not sure of the value of pure-bred poultry is the fact that they have seen too many pure-bred flocks which were little better than scrubs and possibly not as good. This is due to the fact that culling has been neglected and all of the birds have been saved because they were hatched from eggs laid by pure-bred hens. Because hens are of one breed it does not indicate that they are strong vigorous birds and good layers. The pure-bred flock needs just as rigid culling to insure vigor as you would practice on a flock of mongrels which were being culled for the same purpose. As a usual thing the farmer with grade stock will only keep the best of the grades while the farmer with pure-breds may be less energetic in his culling and save everything that possesses the slightest resemblance to a good specimen of the breed represented.

Last fall I purchased 100 White Leghorn hens, fifty from one breeder and fifty from another. They were fair specimens of the kind of birds which can be purchased at seventy-five cents each in wholesale lots. However, about one-half of the birds are a lot better than the other half and suitable for breeding stock this spring. The half which are only "stewing stock" have been culled out steadily through the fall for home use and the remaining birds will be fairly good utility breeders in the spring. The plan of saving every bird because it was pure-bred would have left many hens in the breeding pens which were not vigorous enough for breeders. On the small poultry farm the birds can be culled as they are needed for home use and the flock improved with every chicken dinner. On the larger farms culling is carried on rapidly in the fall and the poor birds go to market by the crate. This culling of pure-bred stock is necessary both with the young birds and with old hens if any of them are to be carried over for breeding stock. Because a hen is pure-bred it does not mean that she possesses the vigor and quality which is needed in the poultry yard during the hatching season this spring.
R. G. KIRBY.

Veterinary.

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

Deformed Limb.—I have a horse with crooked foreleg and he has been in this condition for the past four years. When standing his knee is quite a bit forward of the opposite knee. A. J. T., Branch Co., Mich.—Your horse is either badly knee sprung or has a crooked leg which has never been straight, and the best you can do is to leave him alone.

Scrotal Abscess.—Some time ago a bunch formed in scrotum of a yearling steer that was castrated last fall and a few days ago it opened; since then considerable pus has escaped and the swelling is very much reduced. The nearest Vet. is located twenty miles from here; therefore I would like to have you tell me how to treat the case myself. C. S. H., Freesoil, Mich.—An abscess formed on end of cord which perhaps adhered to skin of scrotum. Dissolve 1 dr. of permanganate of potash in one quart of tepid water and inject some of this solution into wound daily and your steer will perhaps recover without further surgical work.

Nasal Catarrh.—I have a three-year-old colt that has mucus discharge from both nostrils, glands of throat are slightly swollen and she occasionally coughs. Please tell me what is the trouble and what should be done for her. Mrs. F. J., Kawkawlin, Mich.—Apply equal parts tincture iodine, camphorated oil to swollen glands of throat once a day. Give colt a teaspoonful of powdered sulphate iron, a tablespoonful of cooking soda and a tablespoonful of ground gentian at a dose in feed three times a day. If your colt is running out in pasture give 40 drops of fluid extract nux vomica and a dessertspoonful of Fowler's solution of arsenic at a dose in drinking water two or three times a day, as the other medicine cannot be given in drinking water.

Rheumatism.—I have a horse that is troubled with rheumatism and would like to know of a not too expensive remedy for this ailment. M. H., Fair Haven, Mich.—Give him a teaspoonful of powdered saltpeter at a dose in feed twice a day for ten days and if he is then no better, give 1 dr. sodium salicylate at a dose in feed three times a day for twenty days.

Garget.—I have a cow that freshened June 10, one-quarter of her udder is diseased; failing to get milk from this quarter I called our local Vet. who inserted a milking tube, but without it I am unable to milk her, unless she is stripped. G. S., Mayville, Mich.—The diseased quarter had better be left alone, providing she is milking well from the other three quarters. She will perhaps give four-fifths as much milk from the three quarters as if milking from all four; but if more than one quarter is infected, dry and fatten her. Chronic garget is usually incurable.

Scours.—We have a calf eight weeks old that is troubled with scours; have fed it boiled milk, but this does not check bowel movement. We have also fed it raw egg and milk, but this fails to help. A. M., Nunica, Mich.—Your calf should be either stabled in a clean thoroughly disinfected place, or else turned outdoors on grass where the sun shines. Also give 10 grs. of salol at a dose three or four times a day. You should also be painstaking about the supply of water for your calf. Feed it some ground oats and dry wheat bran. Furthermore, be particular that the feeding utensils are clean.

Cows do Not Come in Heat.—We have three cows on good feed and looking fine; living water in pasture; salt by them all the time, yet none of them come in heat. Two of them came in heat last year and have not seen any symptoms of them being in heat since. None of them are with calf. These are good cows and I dislike very much to beef them. A. A., Alto, Mich.—Barrenness is considered by most Vets. to be one of the results of contagious abortion, clinging afterbirth, etc. When the ovaries become functionless or are hopelessly diseased, unsatisfactory results are obtained from drugs. Try giving each cow 1 dr. of ground nux vomica, 1 dr. of ground capsicum and a ½ oz. of ginger at a dose in feed three times a day. Sometimes a forced service produces the desired effect of bringing on heat and if there is a cystic condition of the ovaries, crushing these cysts by hand through rectum and vagina may have a good effect. Perhaps you will have to beef your cows.

Auction Sale of Durocs

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40 big type sows of the best lines of breeding bred to Walt's King 92949, Jo Orion 14th 85855 and Brook American Col. 81383. This trio of boars are hard to be equalled and not to be beaten when breeding and individuals are considered.

Walt's King 92949 is called by Duroc experts the best fall boar produced the past season. 15 good growthy Spring pigs including 1 by Pathfinder, 2 by Fancy Orion King a number by Defender Advance that are full brothers and sisters to the 1st prize under year boar at State Fair 1916.

3 last fall boars by Panama Special 65383 that are real Durocs and credit to their sire. Catalog sent on request, entertainment the night before sale at Whitney Hotel, Ann Arbor or Steele Hotel, St. Johns. All trains met Sale day and transportation to farm and good dinner free. H. L. Igleheart of Elizabethtown Ky. is Auct. assisted by R. L. Bixby and August Miller, St. Johns. All those unable to attend sale may send mail enclosing their bid on any of the animals to be sold. Mail to be addressed to the local auctioneers, or H. L. Igleheart, auct. or W. P. Peury who will represent the Duroc Bulletin, and sent in my care. Any and all stock bought by mail will be guaranteed.

NEWTON BARNHART, St. Johns, Michigan.

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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.

Sale of Duroc Jersey Bred Sows, Spring Pigs and Fall Boars, August 2.

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Swigartdale Pledge Calamity No. 207041 Born Nov. 13, 1916. Marked half and half, will weigh 450 lbs. This calf is excellent dairy type and will develop into a very large sire.

Dam is one of our best cows. Has given 13,000 lbs. of milk since this calf was born. Is a very persistent milker and is now giving over 50 lbs. milk per day. Is a large well marked cow.

Sire is our herd bull G & B Segis Ulrica Pledge a grandson of the Great King Segis whose blood predominates in most all world records.

For production inheritance we could not offer you a better calf. Price \$90.00.

SWIGARTDALE FARM
PETERSBURG, 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.

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If wanting Registered cattle write me your wants before placing your order elsewhere.

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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.

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Holstein Bull Calves from a 30 lb. 6.53 Sire. Dam 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.

OUR Holstein cows are from sons and grand sons of most noted bulls of breed and are heavy milkers. C. L. HULETT & SON, Okemos, Mich.

High Grade Holstein Heifers

Fresh or soon to freshen. Also grade Holstein Bull. Prices reasonable. THE JENNINGS FARMS, V. M. SHOESMITH, General Manager, Bailey, Mich.

Registered Holstein Friesian Heifers. 3 to 6 sires. Priced to sell. Fred J. Lange, Sebewaing, Mich.

3 Holstein Heifers 30.21 lbs. sire. Their dam's dam made A. R. O. sister to dam of 35 lb. cow. bred to brother to 30 lb. 4 yr. old. 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 STAFFEN, R. 3, Howard City, Mich.

BULL CALF for sale, Pontiac Korndyke Breeding. Dam gives 60 lbs. milk per day at 2 years. Farmers Prices. JOHN A. RINKE, Warren, Mich.

Registered Cows, heifers and heifer calves. Priced reasonable. Noted breeding and good individuals. B. B. Reavey, Akron, Mich.

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

FOR Sale. Holstein Friesian 3 year old Heifer with Size and quality. Due latter part of July, am going out of business and will sell her for \$175. Bred to Grand son of Pontiac Korndyke. Write for particulars or come see her. Jay J. Nefcy, Plymouth, Mich., R. 1, Box 8

HEREFORDS

Sires in service, Governor by Prince Donald Militant Farmer by Farmer (Imp), Bonnie Brae Jr. by Bonnie Brae 24th. Inspection invited. ALLEN BROS., PAW PAW, MICH.

Jersey Bulls for Sale from high-producing dams, with testing Assn. 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.

Hillside Farm Jerseys. For sale ten months old bull backed on both sides by R. of M. dams with high official records. C. & O. DEAKE, Ypsilanti, Michigan

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Stock under 2½ years all sold.
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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 Balden, Capac, Mich.

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.

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.

ST. Clair County Jersey Cattle Club. We have for sale Bulls old enough for service and Bull calves, from best strains of Jersey Cattle, Majesty's, Noble of Oaklands, Combination's Premier, etc. Write for Pedigrees, price and particulars. Fred A. Brennan, Sec. Capac, Mich.

Notten Farm Jerseys also a few Duroc Jersey pigs for sale. NOTTEN FARM, Grass Lake, Mich.

Shorthorn Cattle of both Sex for Sale
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FOR Sale—Reg. Short Horn Bulls by Maxwellton Monarch 2nd, a son of Avondale, from 1 to 9 mos. old. John Schmidt, Reed City, R. No. 5, Michigan.

Francisco Farm Shorthorns
Big Type Poland Chinas
"They're rugged—They pay the rent."
Nothing for sale at present.
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"For Beef and Milk"
This heifer at 6 months has bone, size and quality—our own breeding. The blood of Scotch bulls, Imp. Shentone Albino and Imp. Villager Registered stock always for sale.

BIDWELL STOCK FARM,
Box B, Tecumseh, Michigan.

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

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

For Sale One Roan Shorthorn Bull Calf

5 mos. old, a well built calf of milking strain. The first \$100 takes him, also a few heifers and a black, blocky Percheron Stallion, 2 yrs. old in Aug., weight 1500 lbs. M. A. Bray Estate, Okemos, (Ingham Co.) Mich.

Richland Shorthorns Largest and best herd in the state. Tuberculin Tested by the state. IMP. Lorne one of the Sires in service. Entire Herd of Reg. Angus cattle, including the show cattle for sale at a bargain. Mostly Friesian and Blackbirds. Herd at Prescott, Mich. Office Tawas City, Mich. C. H. PRESCOTT & SONS.

SHORTHORNS Maple Ridge Herd, Established 1867. No stock for sale. J. E. Tanswell, Mason, Michigan.

Shorthorns for sale, 5 bulls Scotch top 10 to 14 mos. 13 roan, 1 white, 1 red, price \$150, to \$250. 1 son of Maxwellton Sultan, 19 mos. \$350. C. Carlson, Leroy, Mich.

SHORTHORNS 1 red heifer 7 mo. old 1 red heifer 1 year old. Recorded in buyer's name. H. W. Mann, Danaville, Mich.

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 Shanstun, Fairfield, Iowa, R-8

Cloverly Stock Ranch Angus! Bulls, Cows and Heifers for sale. GEO. HATHAWAY & SON, Ovid, Michigan

HOGS.

Durocs and Victorias

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

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

Berkshires. Bred gilts and sows for fall farrowing. Also Spring pigs, either sex. A few boars serviceable age, reg. Chase Stock Farm, R. 1, Marlette, Mich.

Berkshire Pigs going fast \$15.00 & \$20.00 each three months old. Registered & transferred, richly bred. Riverview Farm, Vassar, Mich.

CHESTER WHITES:—Gilts bred for July and Aug. farrow. March pigs ready to ship. Large type. F. W. ALEXANDER, Vassar, Michigan.

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

40 HEAD DUROC BRED SOWS

15 Spring pigs and 3 fall boars by Panama Special. At Auction, Aug. 3. Catalog on request. NEWTON BARNHART, St. Johns, Michigan

Duroc Jerseys. Breeding Boars and Sept. Gilts J. H. Banghart, East Lansing, 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 & Gilts all sold. I have some extra good heavy boned spring pigs for sale pairs not akin. F. J. DRODT, R. 1, Monroe, Michigan.

Dobson's Durocs; Pigs at weaning time; breeding. Collie Pups. Orlo L. Dobson, Quincy, Mich.

DUROCS a few choice spring boars. Write for description & price. E. D. HEYDENBERG, Wayland, Mich.

Reg. Duroc Spring Boars and Oxford Ram Lambs ready to ship. Exp. Paid, Fine Stock. J. R. HICKS, St. Johns, Mich.

Durocs, Good Spring pigs by Defender's E. E. Calkins, R. D. 6, Ann Arbor, Michigan.

Durocs Big boned March boars sired by grandson of Volunteer. One July yearling Gilt bred for August farrow. Price \$50. RUSH BROS., Romeo, 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 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.

O. I. C. & Chester White Swine

Strictly Big Type, with quality. One yearling sow & two gilts bred for Sept. farrow. Guaranteed safe with pig. I have the finest lot of early Spring pigs I ever raised, can furnish a few in pairs not akin. Address, NEWMAN'S STOCK FARM, Marlette, Mich. R. 1.

O. I. C. An extra fine lot of last spring pigs, either sex and not akin, from good, growthy stock. Farm ½ mile west of depot. Otto B. Schulze, Nashville, Mich.

CHOICE SPRING PIGS

Ready to ship. The big smooth, growthy type, sired by noted boars. Registered and shipped C. O. D. J. CARL JEWETT, Mason, Mich.

O. I. C. Boars and Gilts all sold. I am booking orders for March and April pigs either sex, single, or in pairs not akin. A. J. BARKER, Belmont, Mich. R. R.

O. I. C. Thorough bred O. I. C. Swine all sold out 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. Spring pigs and Reg. Holstein heifers from 5 to 15 months old. CLOVER LEAF STOCK FARM, R. 1, Monroe, Mich.

O. I. C.'S. Gilts bred for Aug. and Sept. farrow. Also a few choice spring farrowed boar pigs. Geo. F. Andrews, Dansville, Mich.

O. I. C's. A few choice boar pigs ready to ship. Want one? Act quick, they won't last long at this price. Stock recorded free. Elmer E. Smith, Redford, Mich.

BIG TYPE POLAND CHINAS

Boar Pigs from the CHAMPION and GRAND CHAMPION and our other GREAT HERD BOARS and big STRETCHY SOWS of very best breeding and individuality. HILLCREST FARM, F. B. Lay, Mgr. Kalamazoo, Mich.

"War is —"

So is starvation, every one should do their bit. You can raise more pork on less feed if you breed Butler's big type Poland Chinas. Sows bred for fall farrow. Boars ready for service. J. C. BUTLER, Portland, Michigan, Bel' Phone

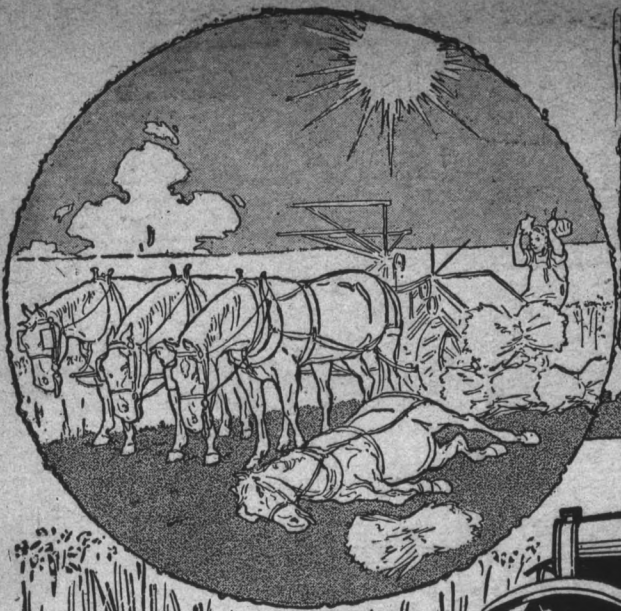
Large Type P. C.

Fall pigs and bred gilts all sold. Nothing for sale at present. W. E. LIVINGSTON, FARMA, MICH.

Big Type Poland Chinas: April and May pigs, healthy and growthy. Prices right. L. W. BARNES & SON, Byron, Mich.

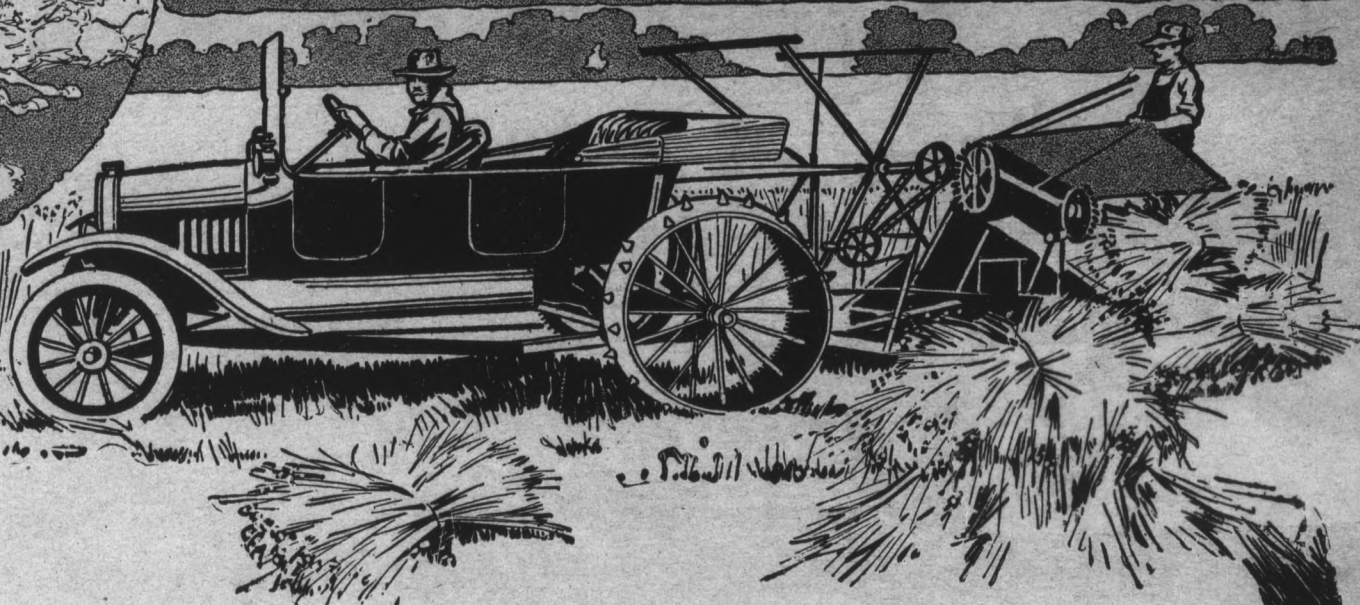
LARGE Strain P. C. everything sold except 1 husky yearling boar that is long, tall & deep. 1 extra choice fall boar. H. O. SWARTZ, Schoolcraft, Mich.

Additional Stock Ads. on Page 31



Smith Form-a-Tractor

\$255 and a Ford



Bigger Crops—Bigger Profits— Do Four Horse Work at One Horse Cost

MAXIMUM crops from every foot of farm land is the ambition and duty of every farmer now. The only positive method of achieving maximum crops and profits is through intensive farming—with the aid of wonderful Smith Form-a-Tractor.

Does Four Horse Work

Everywhere Smith Form-a-Tractor is daily demonstrating its wonderful ability. Farmers are amazed at the way it is doing the work of 4 horses and overcoming labor difficulties. They are saving the wages—now higher than ever before—of 2 or 3 farm hands, and plowing 7 acres in the same time horses took to plow only four acres. At this rate Smith Form-a-Tractor costs them no more to operate than one horse, and they save up to \$500 a year in horse maintenance.

For All Farm Work

The wonderful ability of Smith Form-a-Tractor demonstrated in plowing is proportionate with its remarkable performance in every other kind of farm work—harvesting, discing, drilling, hauling heavy wagons out of the field and doing heavy road work.

Smith Form-a-Tractor gives you even greater working ability than big, expensive tractors. Your initial investment and operating cost are trivial compared with the cost of big machines.

24 Hours Work

Modern farmers who foresaw the wonderful possibilities of Smith Form-a-Tractor on the farm finished their plowing and planting long before farmers who stuck to old-fashioned methods.

Important farm work will not be delayed a minute on account of falling, dying horses overcome by heat, and you will have more time for yourself than ever before. Works day and night if necessary.

Change in 15 Minutes

Any farmer can attach it to his Ford touring car or roadster without special tools, in 15 minutes. Then he can change it back at any time into a pleasure car in the same short time.

Remarkable Superiorities

The permanent features you get with Smith Form-a-Tractor make your Ford a better machine for pleasure purposes.

You get a new cellular type radiator many times more efficient than the ordinary Ford radiator. This guarantees you absolutely perfect cooling in hottest weather and adds to the service and money value of your Ford.

You get a Strong Patented Force Feed Oiling System, which pumps oil to all the bearings of the Ford motor and guarantees perfect lubrication under heaviest work. The big, staunch Smith Form-a-Tractor frame extends the full length of the car and fastens to the front axle.

The wide tractor wheels and 36 conical lugs, 18 in each wheel, give perfect traction in any soil.

Mail the Coupon Quick

It is up to every farmer to increase production—to adapt proved methods of efficiency on the farm. Mail the coupon below for amazing free book on Smith Form-a-Tractor and what it's doing for other farmers.

We will fill your order direct if there is no Smith Form-a-Tractor dealer near you. Send the coupon with \$10 attached and we will ship Smith Form-a-Tractor to you at once. You pay the full cost less \$10 when it reaches you.

SMITH FORM-A-TRACTOR
Michigan Ave. at 16th Street, Chicago, Ill.



Smith Form-a-Tractor,
Michigan Ave. at 16th St., Chicago, Ill.
Gentlemen: Please send me your big, FREE catalog.
I own a farm of.....acres and my principal crops are

Enclosed find \$10.00 for which please enter my order for one Smith Form-a-Tractor with the understanding that I will pay the balance of \$245 plus freight, on sight draft attached to bill of lading. (Cross off if you do not want to place your order now.)

Name.....
Street.....
City.....State.....