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The Economic Importance of Barnyard Manure

By A. F. HEAD

Dept. of Soils, M. A. C.

IT seems that a discussion concerning the value and economic importance of barnyard manure is more than justifiable at this time. From the standpoint of the money value of manure, it is worth more per ton at the present time than ever before. Soon after the beginning of the war in Europe, the source of most of our potash supply was cut off. Practically our entire supply of potash for commercial fertilizers came from the Stassfurt Salt Mines in Germany. The cost of acid phosphate has also increased slightly in price, due to the increased demand for sulphuric acid in the making of munitions. Acid phosphate is made by treating raw rock phosphate with sulphuric acid, which converts the phosphorus into a more available form for plant use. Nitrogen in the form in which it is purchased in commercial fertilizers has always been somewhat expensive, but it is even more so at the present time. Nitrate of soda, which before the war was a very common form of commercial fertilizer, has increased in price until it is no longer economical to use it in large quantities.

Nitrogen, phosphoric acid and potash are the three essential plant food elements which the farmer purchases in commercial fertilizers. The foregoing statements concerning the increased price of these materials in commercial fertilizers should serve as an incentive to encourage the farmer to conserve his natural fertilizer resources on his own farm, namely, the manure pile.

Barnyard manure is one of the oldest and probably the most popular of all fertilizers. Some of the earliest agricultural writers have given honorable mention to barnyard manure as a means of increasing the yield of crops in those early days. It has stood the test from that time until this and is considered at this time, more than at any other time, the cheapest and most economical and reliable method of maintaining the fertility of the soil.

The Composition of Manure from Different Animals.

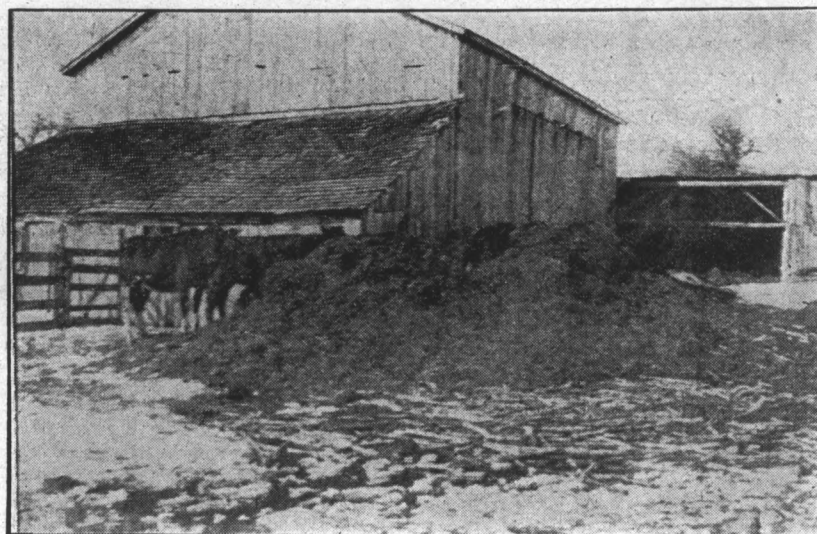
The term "manure," as discussed in this article, will mean the excreta of animals, both solid and liquid, together with the bedding which is used as an absorbent for the liquid portion of the manure.

The composition or fertilizing value of manure depends on several very important factors as follows: (1) kind of food fed to the animal; (2) class of animal (whether cow, horse, sheep, hog, etc.); (3) function of animal (whether used for fattening purposes,

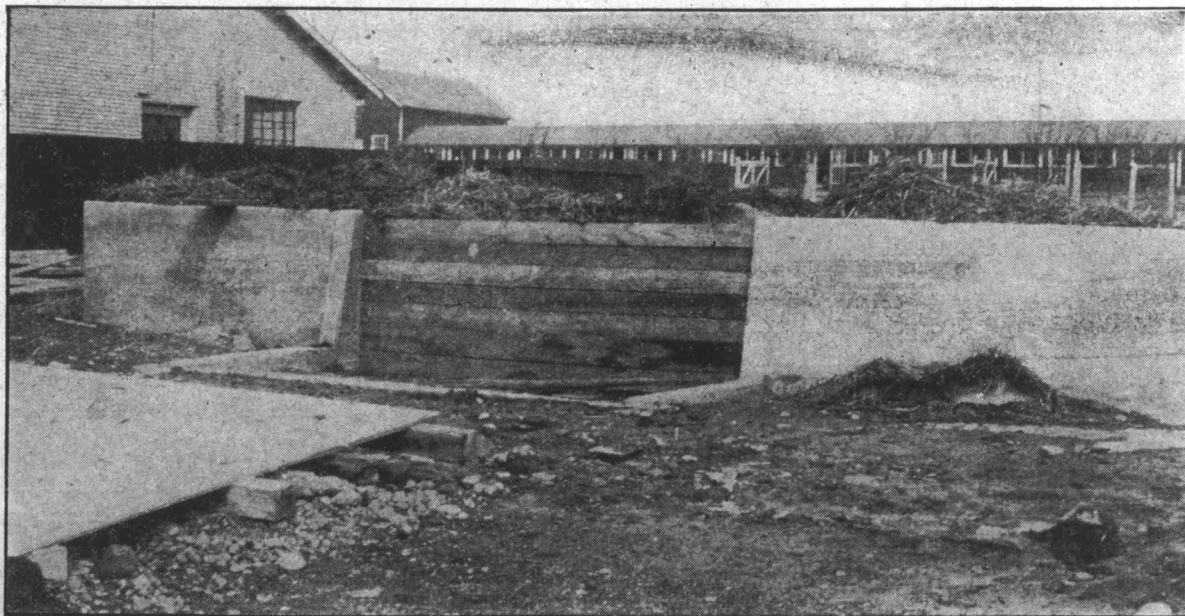
milk production, work animal, or what into its body is the direct source of not); (3) age of animal; (5) kind of the manure produced. The composition of the manure, and its value as a fertilizer is, therefore, going to depend largely upon the fertilizing value of



The Manure Spreader will Soon Save its Cost on Any Farm.



A Typical Example of an Unprofitable Barnyard.



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the food fed. Some feeds contain large percentages of nitrogen and are sometimes known as "concentrates." If the animal is being fed on very concentrated foods, the manure produced is going to contain a high percentage of the elements which are found most abundant in the feed. A dairy cow which is being fed on a ration high in nitrogenous matter is going to produce a manure high in nitrogen.

The function of the animal is also very important. A dairy cow producing 6000 pounds of milk a year will use a great deal of the phosphorus in the food consumed, in the production of her milk. A growing animal uses a great deal of phosphorus in the building of bone and tissue. A fattening steer or other mature animal will use very little phosphorus in its maintenance so that most of this element in the feed will be recovered in the manure. A work horse will return in the manure almost all the nitrogen and minerals taken as food. To state this matter a little differently, the building up and breaking down processes are about equal in the work horse, providing he is a mature animal.

The kind of litter used for bedding and the method of handling are factors that will greatly influence the value of a ton of manure. These points will be discussed in more detail later on.

The following table will serve to give some idea of the average composition and value of the different manures produced on the farm:

Average Composition of One Ton of Fresh Manure.

	Nitrogen pounds.	Phos. acid pounds.	Potash pounds.	Value per ton.
Sheep	16.6	4.6	13.4	\$3.39
Horse	11.6	5.6	10.6	2.55
Pig	9.0	3.8	12.0	2.14
Cow	8.8	3.2	8.0	1.89
Mixed	9.0	4.2	10.4	2.08

The above table is important in that it gives the farmer some idea of the

real fertilizing value of the manure produced on his farm and the relative value of these different manures per ton. In purchasing fresh manure one should know something concerning the relative value per ton of the different animal manures so as to know what price to pay. The valuation of the fertilizing materials in the above table and those to follow are based on fifteen cents a pound for nitrogen, and five cents a pound for the phosphoric acid and potash. This represents the market price of these elements in commercial fertilizers before the war began. (Continued on p. 443).

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DETROIT, APRIL 7, 1917

CURRENT COMMENT.

Agricultural Preparedness. With the country on the eve of war there is a general recognition of the fact in both official and business circles that an ample supply of food stuffs is the most essential factor of preparedness for any eventuality which may arise. This fact is plainly attested by the recent appeal of the Secretary of Agriculture to the farmers of the country "to farm as they have never farmed before," for both economic and patriotic reasons. In this appeal Secretary Houston has emphasized the fact that this year the American farmer should strive for the highest standard of efficiency in the production and conservation of food. He has made a strong plea to the farmers of the country to recognize that it is not only their own crop which they are growing this year, but that it is, in a sense, the nation's crop.

In line with this general recognition of the special need of agricultural preparedness at this time is the recent move on the part of the States' Relations Service of the federal government in asking county agents of the various states to at once report, through their superior officers, regarding the agricultural resources and possibilities of their various counties for the present crop year. Commercial organizations are also discussing this phase of industrial preparedness along with the mobilization of the country's industrial resources as a vital factor of effective preparedness.

On every hand it is recognized by those who are familiar with industrial conditions that the greatest handicap with which the farmers of the state and nation have to contend in any attempt toward maximum production is the unprecedented scarcity of available labor with which to plant, cultivate and harvest the season's crops. Mere preachments are of no value in the solution of this problem. It is a condition and not in any sense a theory with which the farmers of the state and country must contend. Something must be done to relieve this situation if the problem is to be satisfactorily solved.

The call for a survey of agricultural resources in counties where agricultural agents are employed suggests the most feasible means of national and state aid in the solution of this vital problem. The county agents already employed could, under existing conditions, do no more effective service for the farmers of their counties than to supply needed labor from outside sources. While county agents are now working in only about one-third of the agricultural counties of the state, the Agricultural College has at its disposal

a considerable corps of extension workers who are at once familiar with the conditions to be met in various special lines of production and have the executive ability to temporarily discharge such duties as might properly devolve upon a county agent in this connection, and if these extension workers could be temporarily assigned to unorganized counties, a complete and efficient state organization could be quickly effected so far as the country is concerned.

To make a plan of this kind effective it would be necessary to secure the co-operation of large employers of labor in the industrial centers to the end that such labor as might be required to secure a maximum crop production might be temporarily diverted to that end. At present conferences are being held between state authorities and interested and patriotic citizens of our commercial centers in an attempt to work out a comprehensive and feasible plan by which farmers may be assured of an adequate labor supply for the harvesting of such crops as they may be able to plant by the full utilization of resources at present available. There is every reason why every farmer in the state should welcome co-operation to this end. There seems absolutely no question but that agricultural staples of all kinds will remain high in price and yield a better profit to their producers than ever before, and there is every probability that the country will need a greater supply of staple food stuffs than ever before. This is a national need which should not be neglected.

In this connection an appeal will be made to the legislature at once for an adequate appropriation to encourage such a program of agricultural preparedness as may be adopted. While there is no doubt with regard to the patriotic attitude of members of the legislature toward any needed project of this kind, yet expressions from their constituents in approval of such a plan would undoubtedly be welcomed as evidence that they are acting in accord with the sentiment of their constituency in taking such action, hence the wisdom of advising your representatives in the legislature of your personal views on this important question.

While they may properly welcome such co-operation as is above outlined, the farmers of the state should not, however, limit their campaign of agricultural preparedness to voicing this sentiment. There is much that each farmer can individually accomplish for his own and the public good in this connection. By increasing the area devoted to the cereal grains which at present and prospective prices will pay as large a profit upon the labor invested as anything which could be grown upon the land, the food resources of the country would be best conserved. By not only using the available manure, but giving supplementary fertilization with commercial fertilizers where same can be secured, this result would be made more pronounced. If only the usual area of perishable crops such as potatoes and other vegetables are grown, the farmer's revenue from this source will not be impaired, as good prices will be assured for the product, while by increasing the area of the cereal crops, the staple food supply will be increased at a profit to the grower. Of special cash crops, such as beans, the same may be said, while contract crops, such as sugar beets, may be profitably increased to the limit of available labor under the favorable contract which is now being offered.

In this connection a word of encouragement to the farmer who is hesitating about the employment of high-priced labor, in cases where opportunity offers, will not be out of place. It is true that present wage scales are out of proportion to the labor income possible from their employment in crop

production under previous conditions, but conditions have changed, and with present prices of farm products it is possible to employ labor profitably at a greatly increased wage.

In this same connection minor public officials may be able to materially aid this program of agricultural and national preparedness. Where public improvements such as road building, draw heavily upon local labor, so as to interfere with food production, such improvements should be held in abeyance to the end that the labor may be applied toward the insurance of an adequate food supply. The present exigency is one which requires "team work," as well as personal effort to the end that the public welfare may be conserved.

Pursuant to an appeal from Governor Sleeper, the sugar manufacturers of the state have agreed to an increase in the price to be paid beet growers for sugar beets this season. This compromise will in effect raise the price of beets to growers one dollar per ton. The sliding scale contract previously offered by the factories will be changed so as to provide for an increased payment, above the minimum of \$6 per ton for beets, of \$1 per ton for each \$1 per cwt. in the average price of sugar above \$5 per cwt. for the period of four months which approximately covers the factory run. In other words, if the average price of sugar is \$7 per cwt. beets would be settled for at \$8 per ton; if sugar averaged \$7.50 per cwt. beets would be worth \$8.50, etc.

This appeal was made by the Governor subsequent to a request from the federal government for the stimulation of agricultural production in every possible manner. The response of the sugar manufacturers is in line with the action of the cane sugar makers of Louisiana, who recently tendered the government their factories and plantations in a patriotic manner.

This basis of settlement had been previously discussed by both sides to the controversy, but without practical results. The feasibility of this basis of settlement was suggested to a member of the committee of organized growers by the Editor of the Michigan Farmer early in March. At a meeting of the full membership of the executive committee of organized growers, the plan was approved as a satisfactory compromise. At a later conference between a sub-committee of the executive committee of growers and the managers of the sugar companies this plan was submitted by the sub-committee to the manufacturers, but the suggested compromise was not then agreed upon.

There is every reason to believe that this plan will net the growers even better than the \$8 per ton which they demanded for beets. At the same time it retains in effect the sliding scale contract which is at once a protection to the factories against conditions which may obtain after the war, and guarantees growers a fair participation in war time prices. The sugar beet growers of the state should welcome this settlement as a most satisfactory outcome to the controversy. The outcome is a matter for general congratulation both to the Governor, who finally brought about a settlement, the manufacturers who responded to the appeal, and the committee of growers who laid the foundation for a possible settlement of this kind.

We believe that the large body of growers represented by this committee should consider the settlement a satisfactory outcome of their efforts, and grow as liberal an acreage of beets as their conditions will permit, since the crop is certain to be a profitable one at the new price, and the country is sure to need all the sugar which domestic factories can produce.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—While fighting has been more strenuous on the western front, the allies are daily occupying new territory and gradually crowding back the Germans. The front is now within four miles of St. Quentin and some of the important lines of communication supporting the positions of the Kaiser's troops are under command of the British and French guns. In the latest reports it is indicated that St. Quentin has been largely destroyed by fire and explosives, possibly preparatory to an evacuation by the German defenders. This point was supposed to be an important link in the new Hindenberg line. Farther to the north and extending into Belgian territory fighting has been exceedingly severe with comparatively little change in the battle front. The French have added to their victories in the Laon battle sector by capturing several trench systems which have enabled them to better organize the territory recently occupied. Constant artillery fire characterizes the fighting about Verdun and along the trenches farther to the east. Aviation groups have been very active on the Russian front. Austrian troops penetrated the Russian trenches in the region of Kirilbada, but were afterwards driven out during a counter-engagement. In Macedonia the Teutons bombarded positions on the Vardar river and shelled Monastir. Snow storms in the Alps prevented fighting on the Italian front. Additional ground has been gained by the British forces operating in Asia Minor 35 miles north of Bagdad. Here the Turks attempted to out-flank the British but failed. Additional territory has also been taken from the Turks in Palestine near Jerusalem. During the month of March over a half million ship tonnage was sunk by German submarines.

Undue activity among members of the former royal family of Russia has led the provisional government to transfer all personages now with the deposed emperor to the fortress of St. Peter and St. Paul. An effort was being put forth by certain of these personages, it is declared, to proclaim Grand Duke Nicholas as emperor. Reorganization of the new democracy is now going on very smoothly and the military units on all fronts appear to be in perfect harmony with the officials and the policy now being followed by those in authority. Russian soldiers now on the French war front have pledged their allegiance to the new government.

Political disturbances were started in Spain last week by classes looking toward the establishment of a democracy in place of the present government. Early this week the riots had ceased and there appeared to be less reason for believing a change similar to the one in Russia would occur, since the citizens have subscribed liberally to a large loan to consolidate the public debt. In fact, the loan was oversubscribed six times. The government has also issued a decree prohibiting the transfer of ships. This step was taken to protect Spanish shipping by preventing vessels from going to foreign countries.

Several leaders in the Cuban rebellion have just been captured in Haiti. Cuban arms have the rebels nearly rounded up and it is but a matter of time before normal conditions will be re-established.

National.

Congress convenes this week to consider a definite program of action for the United States in connection with its relations to the German government. Among the requests to be made by President Wilson are a declaration of a state of hostility now existing with Germany, authority to use land and naval forces for the defense of the country and its interests, power to enlarge the army to 500,000 men, appropriations to properly equip this army, provisions for additional navy vessels and a larger marine corps, the extension of financial support to the allies, the enactment of provisions to increase American tonnage upon the high seas, and espionage and censorship bills to keep valuable information from reaching the enemy.

The fiftieth anniversary of the purchase of Alaska by the United States government was recognized in Washington last Friday. The territory now has a population of 65,000 people, and with its resources as yet scarcely touched, this region has already brought more than \$750,000,000 into the channels of American trade.

A NEW SERIAL.

Our readers will be highly delighted with the new serial story, "Contra-band," by Randall Parrish, which will start in next week's issue of the Michigan Farmer.

Boy Champion Potato Grower

By L. R. WALKER

VERNER FELT, the State Champion Potato Club boy of the state of Michigan is a ninth grade student of the National Mine school, Marquette county. Verner is fifteen years old but is large for his age, so much so that the older boys of the town made sport of him because he was in a club of kids although many of the other boys were as old as he. The older boys bothered him so much that he had about made up his mind that he wouldn't be in the club another year although he wouldn't shirk his work on the crop then growing.

Verner was one of the first boys at National Mine to decide joining a club, and at the first meeting was elected president. The boys made no mistake in their selection as he made a good presiding officer and was interested in everyone of his fellow club members. He spent one day in early fall with the writer in visiting every boy's plot and he seemed as much interested in each plot as he did in his own. Last spring the boys of National Mine had some difficulty in getting quarter-acre plots and Verner had to take his from his father's back yard. It was stony and very irregular and also was made up of two parts connected by a small narrow strip wide enough for two or three rows of potatoes. Verner supposed he had a full-sized plot but when his yield and profit became known the plot was measured by two separate parties and it was found to contain only thirty square rods. This being the first year of club work in the upper peninsula, and knowing the difficulty that some of the boys had in getting plots, the state leader was a little lenient and didn't force this rule. He has said that it must be lived up to hereafter regardless of difficulties.

Verner had on his thirty square rods seventy-five and one-half bushels of potatoes. E. C. Lindemann, State Club Leader, made a uniform price of thirty cents a bushel for culls, \$1.25 per bushel for marketable potatoes, and \$2.00 per bushel for seed, in making up the profit or loss of the club members of the state. These set prices gave Verner Felt \$125.87 as his crop value. He has forty bushels of good seed left over which will undoubtedly make his actual profit still higher than it was determined at the time the contest was closed. His total cost of production, including all work, seed, fertilizer, etc., was \$31.56. This left a profit of \$94.37. His record as scored on the four-point basis is as follows:

Yield, acre basis, bushels..... 402.6
Profit, acre basis.....\$503.30
Quality of potatoes scored..... 90
Story scored 80

This gave him first place on yield with a premium of \$5.00; first place on profit with a premium of \$5.00 and the state championship with a prize of \$8.00, a total of \$18 won by his hard work, his stick-to-it-iveness, push, pluck and persistence. Verner is a sticker for next year and the boys who laughed at him in the summer are now becoming club members.

How the Crop was Grown.

The following is Verner's story of "How I Made my Crop of Potatoes."

"I joined the club for the purpose of learning to grow potatoes last May and when the time came, proceeded as follows: There had been some manure put on part of the ground the year before. I then put manure on the remainder, in all five loads. The land is very hard to get here in a solid piece so had to have it in an irregular patch. The manure that had been placed on the ground the year before was intended for potatoes for our own use.

"I had the ground plowed twice, first about the fifteenth of May, and dragged it the same time, then again about the fifth of June. I put in six bushels of seed, planting them about four inches

deep, sixteen inches apart and thirty inches between each row. When they began to grow I hilled them and picked the weeds out by hand. I did not have any trouble with the bugs, there were a few that I picked off by hand. I did not have any trouble with the frost because the ground where the potatoes grew was high and the frost did not get at them.

"The stalks grew up nice and big, some of them were about three feet tall, they were not very nice through the dry weather but when the ground became moist after the rain in the fall, they started to grow nicely.

"I hoed my potatoes by hand because it would be impossible to do it with a horse and cultivator on account of the ground being rough and full of rocks. We had half of the ground in with oats last year and half with pota-

own land to know something of the amount produced by different animals on the farm per year and the value of this manure in dollars and cents as compared with an equivalent value of commercial fertilizers.

The following table which appears in Farmers' Bulletin No. 192 should be of interest in this connection.

Amount and Value of Manure Per 1000 Pounds of Live Weight of Different Farm Animals.

	Amount per day pounds.	Value per day cents.	Value per year dollars.
Sheep	34.1	7.2	26.09
Calves	67.8	6.7	24.45
Hogs	56.2	10.4	37.96
Cows	74.1	8.	29.27
Horse	48.8	7.6	27.74

At the present prices of fertilizing materials, one ton of the average farm manure freshly produced is worth about \$4.00. Fifty average dairy cows will produce in one year enough manure, if properly cared for, to equal



A Group of National Mine Club Boys. The Tall Boy is Verner Felt. At the Left in Rear is Cleo Farm, Second State Winner.

toes because I could not get any other place where potatoes had not been grown the year before.

"When the ground was measured, there were thirty square rods. It was very hard to measure it because the ground was in a very irregular patch with many test pits and stone piles.

"When I dug my potatoes seventy-five and one-half bushels which were

more than \$2,500 worth of nitrogen, phosphoric acid, and potash if purchased in commercial fertilizers at present prices. Farm manure is a valuable by-product on the farm and its importance as a fertilizer for the maintenance of soil fertility cannot be over-estimated.

Losses in Manure.

If the greatest returns are to be



Verner Felt's Plot at Digging Time. R. C. Inselman, Club Leader, and J. W. Weston, Leader of County Agents, at Side.

dug by hand. I worked about one hundred and ninety hours in all."

ECONOMIC IMPORTANCE OF BARN-YARD MANURE.

(Continued from first page).

At the present time nitrogen is worth about twenty-five cents per pound, potash about forty cents, while the price of phosphoric acid is about the same price as formerly with a very slight increase. Since the element phosphorus exists in small amounts in most manures it is of much less importance than nitrogen and potash.

It should be of interest to the farmer who produces manure to use on his

Sad as it may seem, very few farmers exercise any care whatsoever to prevent the loss of the liquid manure by leaching.

Very few, if any, who read this article have not seen a manure pile behind a barn, gradually wasting away by the rains leaching through it. The dark-colored liquid which is often seen flowing away from a manure pile contains a great deal of soluble plant food which is totally lost. Fig. II is an actual photograph taken of a manure pile that has lost more than half of its fertilizing value by leaching alone. Notice the dark-colored portion flowing away. This is what many have termed an unprofitable barnyard. Leaching goes on inside as well as outside the barn. Many have seen holes bored in the bottom of a wooden floor to drain away the liquid manure, small ditches are dug leading away from the barn to drain away the liquid from the manure and many instances have been encountered where the farmer has built his barn close to a stream so that the manure can be emptied into the stream, thereby getting rid of it. How about the losses which occur from the heating of manure piles? It is not uncommon to walk into a stable that has been closed up over night and almost be driven out by the strong fumes of ammonia. These ammonia fumes contain nitrogen which is escaping from the manure pile in large quantities. Whenever manure is allowed to heat, either in the barn or outside the barn in a pile, nitrogen is being lost which is usually the most valuable fertilizing constituent of the manure. These losses should not occur and must not occur in the future if the farm and the farmer are to be successful. The manufacturer cares for his by-product, why not the farmer? The farmer who allows his manure to lie in a pile in his barn or behind his barn without some means of protection should have his attention called to the matter. If fresh manure is exposed to the weather for a period of two months it will lose more than half of its fertilizing value. The loss is greater than what one would ever imagine.

At the New Jersey Experiment Station four samples of manure were exposed to the weather for varying lengths of time and the loss of fertilizing ingredients determined. The following table gives the results of this work and should be of considerable interest in this connection.

Losses in Manure from Leaching.

Period days.	Nitrogen per cent.	Phosphoric acid per cent.	Potash per cent.
131	57.0	62.0	72.0
70	44.0	16.0	28.0
76	39.0	63.0	56.0
50	69.0	59.0	72.0
Average	51.0	51.1	61.1

The above table shows that the average loss amounted to more than fifty per cent of the total value of the fertilizing ingredients in the manure. The writer has seen the manure on many farms exposed to the weather for several months before it was applied to the land. It is estimated that more than \$250,000,000 are wasted each year in the United States by improper caring for manure. The sad feature of this loss is that it could easily be prevented.

Preservation of Manure Upon the Farm.

The best and most sane way to handle the manure produced on the farm, is to haul it directly to the field as fast as it is produced and spread it evenly over the land. There are occasions when this cannot be done, but on most farms, such as the average farm in Michigan, this practice can be followed. If it is not possible to apply directly to the field, a few gentle hints as to the preservation of the manure in the barn and in the pile will no doubt be helpful. Where it is neces-

sary to store manure for any length of time some means should be provided to prevent it from heating and leaching. A concrete manure pit, such as shown in Fig. III, is the most sensible and economical method for storing manure. This pit is twenty-four feet long, twelve feet wide and three feet deep at the sides. It has a concave floor so that the liquid manure cannot drain away, it is also provided with a driveway so that one can drive through the middle and load from either side. This pit can be built quite cheaply by the farmer himself. The size of the pit will, of course, depend on the amount of manure one wishes to store at any given time. The manure pit should pay for itself in a very short time, especially if it supplants the manure pile behind the barn.

While a manure pit is considered the best way to store manure there are other ways to handle the manure that may prove somewhat as effective. An open shed with a good roof and a tight clay or wooden floor will serve as a very good means of storage. If it is necessary to pile the manure in a large heap out in the open for a short period of time certain precautions should be taken to insure as little loss as possible. Build the pile so that the sides will be quite vertical, thereby allowing the water to run off rather than soak into the pile. Make the pile high enough so that not even the hardest rains can soak through and drain away the liquid manure. If the weather is extremely dry be sure to keep the heap well moistened to prevent heating.

Covered barnyards are becoming quite common where a great deal of yard feeding is carried on. A tight roof, well supported, is all that is necessary to prevent the rains from washing away the liquid manure. Where much feeding is done the saving of the manure will soon pay for the cost of the shed.

A tight clay floor in the barn will prevent a considerable loss of the liquid manure. Sufficient bedding should be used to completely absorb all the liquid produced. The precautions just mentioned are practical and simple and if practiced will mean the saving of much of the fertilizing value of the manure.

If the manure is kept well moistened and compacted, either in the pit or outside, most of the heating will be prevented. Bacteria that causes the heating or burning in the manure pile, grow best and work most actively in the presence of air, so that by compacting and wetting the air is driven out, thereby destroying the conditions favorable for such bacterial growth.

Preservatives, such as gypsum or land plaster, kainit, muriate of potash, and acid phosphate, are often used in the stable to prevent the loss of nitrogen in the form of ammonia. Gypsum, or land plaster, is used most commonly, the other preservatives being somewhat injurious to the hoofs of the animals. Gypsum, or land plaster, converts the nitrogen compounds in the manure into a form so that there is much less danger of its being lost by passing off as a gas. From one-half to one pound of gypsum per animal, spread over the manure in the barn each day should serve to keep down a considerable loss.

Floats, or raw rock phosphate, is commonly applied to manure in the stable more as a reinforcing material rather than a preservative. Since manure is low in phosphorus an application of raw rock phosphate will help to balance up its plant food elements, at the same time the decay of the manure may aid in making the phosphorus in the raw rock more available.

Where the manure is hauled directly to the field as soon as produced, it is seldom necessary to use preservatives. Most disinfestant materials are injurious when applied to manure and are

seldom used unless to prevent the breeding of flies.

The Proper Application of Manure.

It has been a common practice among farmers for many years to apply the manure produced on the farm as a top-dressing upon the land. This practice has proven itself a good one and has several fundamental principles underlying it. First, and most important of these principles is, that it is nature's way of applying her plant food to the soil. The natural tendency is for the elements of fertility to pass gradually into the soil, especially the soluble compounds of nitrogen. When manure is applied as a top-dressing it should be incorporated into the soil by the use of a harrow or other suitable implement, preparatory to planting the field. Manure when applied as a top-dressing may also serve as a mulch, thereby preventing the loss of considerable moisture by evaporation.

When manure is hauled to the field it should be spread evenly over the land at that time rather than pile it in small piles to be spread later. Placing manure in small piles and allowing it to stand for any length of time is a very wasteful practice. The rains leaching through it will carry the soluble material down into the soil, making the soil beneath the pile more fertile than the rest of the field. The result is an uneven growth of crops and a lodging of the grain, due to an excess of nitrogen in these spots.

A manure spreader is the best and most economical method of applying manure to the land. The manure spreader is second in importance, only to the self-binder or reaper, as an implement upon the farm. The manure spreader is always ready for its particular purpose, the manure can be spread easier and more evenly, and the amount applied can be regulated.

A good time to apply manure is on the land that is to be plowed for corn. Corn responds well to an application of manure. If wheat follows the corn it will be greatly benefited from the manure and there will be less chance of the wheat lodging, than if the manure is applied directly to the wheat. A practice which is very commonly recommended is the application of manure to grass lands. This practice should be encouraged since it gives excellent results. The individual farmer himself should act as his own judge as to the proper time to apply his manure to get the maximum returns.

The amount of manure to apply varies somewhat with the kind of manure that is to be applied. From five to eight tons per acre is a good application of the average barnyard manure. If it is desired to cover a large area and only a limited amount of manure is at hand, an application of five tons per acre will suffice to give good returns. Corn can withstand a much heavier application of manure than wheat, so that the crop will influence to a certain degree the amount that is to be applied at a given time. It is a good plan to manure at least one crop in the rotation, in this way covering a portion of the farm each year. In a three-year rotation of corn, wheat and grass, the manure can be applied to the grass land just before it is to be plowed for corn.

The importance and proper conservation of barnyard manure cannot be over emphasized. The success of many farms may lie within the boundaries of the manure pile. Conserve the by-products on the farm for within them may be stored the true profits of the farm.

MENDING LEAKY WATER PIPE.

To the man who is having trouble with his water pipe as mentioned in the Michigan Farmer of March 24, I would say as follows: Take a length of pipe one-quarter inch larger than the pipe he wants to mend, and with a

hack saw cut to any desired length. Saw the pipe to be mended in two, and after smearing with thick paint, put the ends together inside the larger pipe. I have mended many leaks in this way, and never had a failure.

Ionia Co.

M. SPALDING.

LILLIE FARMSTEAD NOTES.

I think a word of caution ought to go out to the farmer this spring about planting too many potatoes and too many beans. From what I hear on every hand these two crops are liable to be overdone. One man argues that with potatoes at \$2.50 to \$3 per bushel now they can not be cheaper next year. But there is no sound argument in this reasoning at all. The price this year has nothing whatever to do with the price next year. Potatoes are not like grain crops, where a reserve is carried over every year. The potato crop is cleaned up every year and we all start in new again. The previous year don't count at all.

With a large acreage and a big crop we will produce more potatoes than are wanted for consumption and as they can not be held over for another year they are all thrown on the market and the market is glutted and ruined. How long ago is it that we had potatoes selling for fifteen cents per bushel. Yes, and many thousands of bushels were never sold at all. We can easily produce those conditions again. All that is necessary is a large acreage and a good crop. With the present price of seed potatoes it would be too bad to do this.

Farmers are paying \$2 a bushel for little, small seed potatoes that can not be sold for consumption. It takes around ten bushels per acre for seed. If potatoes should be cheap another year the loss from this source alone would be tremendous. Add to this the use of the land, the labor, etc., and if potatoes are cheap the loss would be almost beyond comprehension. We know farmers are prone to overdo things like this. They lose their heads when potatoes go to \$2 and it takes a pretty level headed fellow not to.

It seems to me no farmer is warranted, from a good business standpoint, in putting in anything above his usual acreage. If we all do this we may be reasonably sure of a profitable market. That is better than to have a tremendous big crop that sells below the cost of production. My advice is, forget the present price of potatoes and plant just the same acreage you would under normal conditions. It is better to be safe than sorry. Why, every vacant lot in Grand Rapids and Detroit will be planted to potatoes, all the vacant lots in the small towns will be, also. You can't blame these people much, for potatoes have been too high. This will, of course, only last one year. They will get enough of attempting to grow their own potatoes in one season. In fact, they will get enough of it long before the season is over, but there will be enough potatoes grown in this way to affect the market this year.

Take care of the potato market for next year by being conservative in planting this spring. Better sell all the potatoes you can possibly spare for \$2 than to plant so many that you ruin your market for next year. The safest way is not to plant quite so many potatoes this spring as usual.

Beans.

The bean crop is a little different because a surplus can be carried over. But with the present price of seed beans a poor crop is almost sure to bring a loss. Too large an acreage means a poorly cared for crop and that means loss. Where a man puts so much money into seed he ought to have some guarantee as to price. We can be sure of a good price if we don't raise too much, but if we do down goes the market and the farmer alone stands the loss. Think of those things and play safe. COLON C. LILLIE.

FARM NOTES.

Seeding Sweet Clover with Wheat.

Could you give me information concerning the seeding of sweet clover with fall wheat. Would the clover be all right sowed in the spring the same as June clover? How would you sow it? Would you drill it in or would a drill cut the wheat roots too much? How much would you sow per acre? Sanilac Co. C. D.

If sweet clover is to be seeded with wheat, it would be better to drill same in with a disk drill, going crosswise of the drill rows, which would injure the wheat very little. About ten to twelve pounds of good hulled seed should be sown.

Whether this method of sowing sweet clover will result in a good stand or not will be somewhat a matter of experiment, since it has not been grown in a commercial way for sufficient time and under different conditions in this state to give us absolute knowledge of what may be expected of the crop. It, however, requires a firm seed bed for best results, and we can see no reason why it would not make a stand in wheat, if other conditions are favorable.

Seeding Alfalfa in Winter Wheat.

I want a little information on sowing alfalfa this spring with winter wheat. Do you think I would get a good catch sown this way? How much seed would you sow to the acre and how would you sow the seed? This land is sand and clay loam. I plowed under a big crop of clover a year ago last fall. Do you think I had better sow lime on this piece of wheat? If so, how much to the acre and how would you apply same? Would it be beneficial sown on top of the soil? Newaygo Co. F. R. G.

Evidence as to the success of this method of seeding alfalfa in Michigan is rather conflicting. Where only a small quantity of alfalfa seed has been used with cloverseed, very good results have sometimes been secured. Where attempts have been made to seed alfalfa alone in wheat on land which has been previously devoted to this crop and which was not inoculated with the bacteria for which alfalfa is the host plant, many failures have been reported. This method of seeding alfalfa in Michigan may be considered to be still in the experimental stage.

In case it is adopted it will be better to sow it in combination with June clover, since this will in any event give satisfactory results, and if a fair stand of alfalfa is secured it will perpetuate the meadow for a longer period than if it were not sown in the combination, and a natural inoculation of the soil will be brought about to some extent.

Eradicating Sand Burs.

What is the best way to eradicate sand burs on a field of about four acres, whether by summer fallow or by crop and cultivation? Oceana Co. J. E. C.

Thorough cultivation is the best method of eradicating sand burs. Summer fallowing would be the cheapest method of accomplishing the desired result so far as the labor cost is concerned. If conditions are such that it is desired to grow a cultivated crop, considerable hand-hoeing will be required to accomplish the desired result. In this case root crops are generally considered best to grow, since they can be planted late and thorough cultivation practiced for some time before planting, which minimizes this hand work in keeping the noxious plants down.

Growing Oats After Oats.

I would like to know if we can raise a good crop of oats where we raised a heavy crop of oats last year. It was not seeded last year with clover seed and now I would like to sow oats again and seed it. The ground is of a rich black clay loam soil. Allegan Co. B. M.

While it is not good farm practice to grow two small grain crops like oats in succession on the same ground, yet on strong land such as is described in this inquiry, it would be more likely to give satisfactory results than on a less fertile soil.

WIDE VS. NARROW TIRES FOR FARM WAGONS.

For many years advocates of good roads have urged the use of wide tires on wagons as a means of reducing the needless wear of road surfaces. The most convincing argument is usually one that presents a prospect of financial advantage, and there is a good argument for wide tires based on their saving to the farmer. In fact, it is a better argument for such tires than their service in protecting roads. It is based on facts ascertained by experiments made by the United States Office of Public Roads and Rural Engineering under the direction of E. B. McCormick, chief of its division of rural engineering.

How the Test was Made.

An earth road was plowed up, graded and then rolled with a ten-ton roller weighing 450 pounds per inch of width of the rim of the wheels. A wagon was then loaded until the total weight on the wheels was 5,000 pounds, and the pull in pounds required to haul it along the road was measured. The wagon was equipped with one and a half, two, three, four, five and six-inch tires, and the weight of the loaded wagon was 883, 625, 417, 313, 250 and 208 pounds per inch width of tire for these different widths. It will be noticed that with one and a half-inch and two-inch tires the wheels produced greater loads on the road, per inch of width of tire, than did the road roller used in constructing the road, so that it is self-evident that such tires will cut into a new road somewhat and are therefore undesirable. After each test and before the beginning of the next, the road was replowed, graded and again rolled, so as to have the conditions at the beginning of each test as uniform as possible with an earth road. The tests selected for comparison were those in which moisture and weather conditions were identical.

The Result of the Test.

The results of all these tests show that it takes a pull of about ninety-one pounds per ton of gross load when one and a half-inch tires are used, eighty-two pounds with two-inch tires, seventy-four pounds with three-inch, sixty-nine pounds with four-inch, and sixty-six pounds with five-inch. With six-inch tires the pull increases somewhat above that with five-inch tires, indicating that for such a wagon and load there is no advantage in increasing the width of tire above five inches. From these figures it will be seen that a horse must exert itself about twenty-three per cent more to pull the same load with one and a half-inch tires than with three-inch tires, and over ten per cent more with two-inch than with three-inch tires. Any such steady, needless strain on the strength of the horses, avoidable by substituting wide for narrow tires, is a waste of the farmer's assets which he will be quick to see when pointed out.

Width of Tires Indicated by the Test.

The width of tires recommended by the Department of Agriculture is as follows: One-horse wagon weighing 2,000 pounds loaded, two inches; light two-horse wagon weighing 3,500 pounds loaded, two and a half inches; medium two-horse wagon weighing 4,500 pounds loaded, three inches; standard two-horse wagon weighing 6,800 pounds four inches; heavy two-horse wagon weighing 7,500 pounds loaded, five inches.

With such tires not only will the farmer work his horses to the best advantage, but he will also reduce the amount of money that must be spent to keep the roads in a condition for easy use. He will be a gainer in every way. He can haul heavier loads with the same team, he can haul the same load with less exertion than with narrow tires, and every time his wide-tired wagon goes over an earth road it will roll it instead of rutting it.

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However, the John Deere, "The Better Binder", has throughout maintained an unbroken record of success in cutting, binding and tying grain.

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Accurate tying mechanism.

Quick turn tongue truck saves time, relieves horses and makes square corners and full swaths possible.



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JOHN DEERE, MOLINE, ILL.



The John Deere-Dain System Rake

Here is what you do with the Dain System Rake:

Follow the mower closely, rake while leaves are still active and place hay upon clean stubble.

Make straight windrows, and no dumping of rake is required. There is no bunching of hay in turning corners.

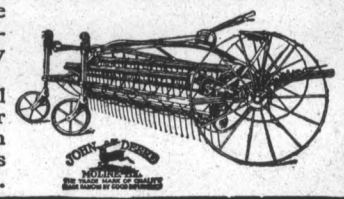
Put the hay in medium size windrows, with the bulk of the leaves inside and the majority of stems outside.

The windrows will be loose in the center for the free circulation of air. The hay retains its color and nutrition.

[The John Deere-Dain System is the rake employed with the Dain System of Air-Curing Hay.

Reel raised or lowered, rake thrown in or out of gear and angle of teeth changed by means of convenient levers.

Ample capacity. The inclined frame grows higher where the windrow becomes larger—an exclusive Dain feature.



John Deere Spreader

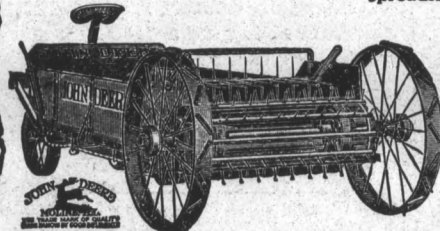
The Spreader with the Beater on the Axle

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

Low down, with big drive wheels out of the way. Easy to load.

Revolving rake, driven by manure moving toward the beater—no bunching of manure. Ball bearing eccentric apron drive—a new and exclusive driving device. Makes uniform spreading certain.

Wide spread attachment for spreading seven feet wide can be furnished for the John Deere Spreader. No chains nor gears. Quickly removed.



John Deere Factories

Every implement bearing the John Deere trademark is made in a John Deere factory.

To insure the best in every class of implements there is a special John Deere factory for making each class. John Deere Plows are made in a plow factory; their haytools in a hay-tool factory; their planters in a planter factory.

Every tool in the John Deere line is made in a factory organized and equipped to make such tools.

All John Deere factories are in communication with each other. Each has the benefit and experience of all.

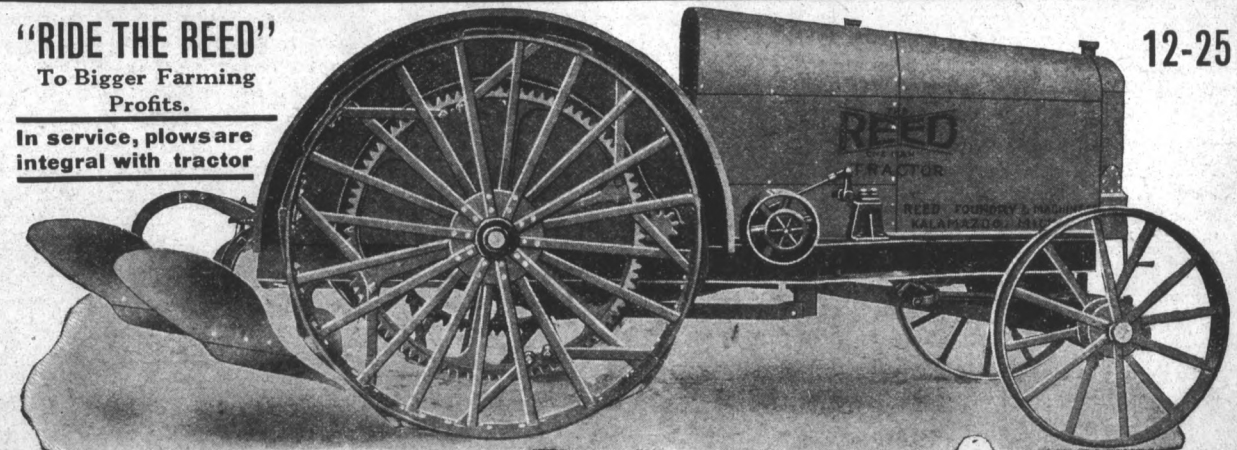
When it comes to purchasing raw material, John Deere factories as a unit, represent an enormous buying power. This is an advantage to purchasers of John Deere implements.

Don't forget that each John Deere factory is a leader in its field—that every implement it turns out is worthy of the name, "John Deere."

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In service, plows are integral with tractor



A One-man Plowing Outfit—With this 12-25 high-class quality tractor all operations are easily performed from the seat. The REED follows the furrow on ordinary land as straight as a die. Plows are integral with Tractor—controlled by Power either when standing or moving—and can be removed in 15 minutes. Plows have center draft—no side pull. You can plow into corners and get as near the fences as with horses. Abundance of power for traction and belt work on your farm. The REED is equipped with Waukesha Motor and our own Special Selective Transmission. A Tractor of QUALITY—best materials and workmanship—built to eliminate trouble and

save time and money for the farmer with 75 acres or more of land. Free bulletin. Fill out coupon or send postal to

Reed Foundry & Machine Co., TR Dept., Kalamazoo, Mich.

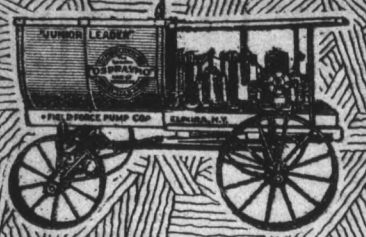
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is a matter of performance rather than of theory.

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LEGUME SEEDS
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STRAWBERRY and Small Fruit Plants. We guarantee Our Hardy Northern Grown Plants to please. We are Growers. Our System of Selling Direct, Saves you Money. Write to day for our free Illustrated Plant Book.

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Rokely's famous Michigan plants. Only hardy well rooted stock. All varieties—Strawberry, Raspberry, Blackberry, Currant, etc., including the **EVERBEARING STRAWBERRY**. Write today sure for free catalog.

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ALBENS NURSERY & SEED HOUSE, Geneva, Ohio.

PEACH TREES 25,000 fine trees for sale. List free.
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Pruning Gooseberries and Currants

IN traveling over the state one is impressed with the increasing interest manifested by the growers in the production of currants and gooseberries. Until late years these fruits have been neglected, but plantings are now on the increase and should continue, for the value of currants and gooseberries has never been fully appreciated. When we consider that they are the hardiest of our cultivated fruits, and that they are easily grown it is surprising to find such small plantings. Another valuable point to remember is this, though currants and gooseberries may return small profits they often serve as a "filler-in crop" and thus tide over years when other crops may be a failure.

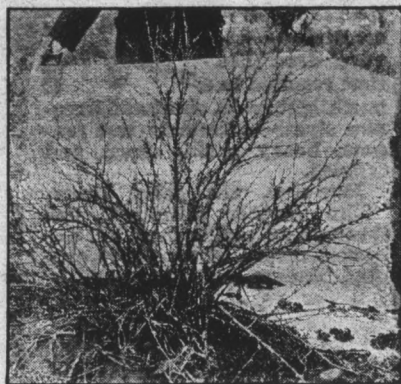
These Fruits Easily Grown.

Because of the hardiness and general vigor of this class of fruits the idea prevails in some communities that they require very little or no attention. While they often produce fairly successful crops in the face of neglect, they do much better where proper care and attention are given. Currants and gooseberries are heavy feeders and they must have their food readily available as their roots do not spread far or deeply. Frequent shallow cultivation is necessary to keep up the dust mulch and prevent evaporation of the moisture as well as to keep down grass and weeds. Remember that plants of this nature demand a cool moist soil and a mulch of straw or sawdust may be employed to good advantage to conserve the necessary moisture.

Pruning Important.

Proper pruning of currants is especially necessary where good crops of high quality fruit is wanted. It is necessary to keep in mind that the bearing habits of red currants and black currants differs somewhat so that the pruning of one is slightly different from the other. Red and white currants bear most of the fruit on wood two to four years old and black currants are dependent on the one-year-old wood for most of the fruit. Pruning should, therefore, be governed by

these facts, one should aim in pruning black currants to keep up a plentiful supply of young wood and in red and white currants two and three year wood. At the end of the first year four to eight branches should be left. This number will be sufficient to bear a good crop of fruit and future pruning should have in view the maintenance of this number of branches two and three years of age and a few others coming on to take their place. Care should be taken to shorten in the younger branches in order to prevent the bush from becoming straggly and to force the development of fruit spurs evenly along the whole growth instead of at the ends of the branches. Prun-



Gooseberry Before Pruning.

ing may be done at any time when the wood is dormant, although it is considered best to wait until just before the growth starts in the spring, thus avoiding the danger of the wood drying out and winter-killed wood may also be removed at the same time.

Trimming Gooseberries.

Pruning of gooseberries is very similar to that of currants. The fruit is borne on one-year-old wood and from spurs on the older branches. After two or three years the wood begins to fail and produces inferior fruit. After the bushes come into bearing some of the older wood should be removed each year to give place to the younger, more vigorous shoots. Keep the center open in order to facilitate picking but not too much so, for injury from sun scald may result. Straggling branches with a tendency to touch the ground should be removed to give a better circulation of air. By careful pruning as outlined and spraying to preserve the foliage, a currant or gooseberry planting should last for a number of years.

Mich. Ag. Col. J. H. CARMODY.

PEACH POINTERS.

The peach is not a long-lived tree and every year some will die and have to be replaced. The orchard map is necessary to keep the trees of one variety in certain blocks so that the orchard will not become difficult to harvest because of indiscriminate plantings of mixed varieties. Each year some of the trees may have to be removed because of the serious diseases known as the yellows or the little peach. The cost of new nursery stock is a yearly expense to the owner of a commercial peach orchardist. On the large farm there is the additional cost of labor for planting trees.

Give Thorough Cultivation.

Cultivation is necessary to produce peaches and all during the hot days of early summer the cultivators must be busy plodding back and forth across the orchards, forming the mulch which conserves moisture and also keeping down the weeds which steal the water which the trees need to produce an abundance of juicy peaches. The cultivators cannot go too close to the trees or they will be barked by the horses or implements, no matter how carefully the driver may try to guide the team. This means that there is a certain area close to the trees which must be hoed out with grub hoes and

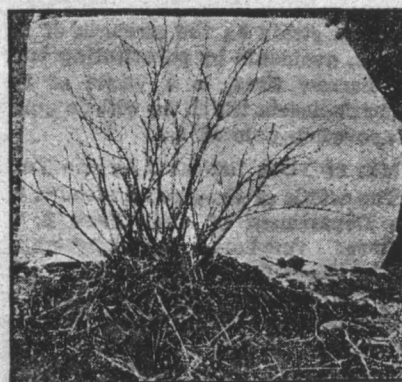
frequently when the sod grows thickly around the trees it is a long and difficult work to finish up the hoeing in a satisfactory manner.

Thinning, an Essential.

Peach trees will overbear and the trees thickly loaded with fruit do not have the strength to mature all of them into fine large specimens which will bring good prices from the consumer and enable the grower to dispose of his fruit at a fair price even when the market is glutted with inferior stock. This means that the trees must be thinned and thinning a large orchard is a long tedious job unless there is an abundance of hired labor, and labor means an expenditure of money and more charges chalked up against that crop that is to be if nothing happens. Thinning cannot be hurried or the result will be careless work and many branches injured by the fruit being carelessly torn from the limbs. The men who know how to thin properly and work rapidly are worth money to the peach grower, but it is unfortunate that much of this work must often be turned over to the men who do not have the best interest of their employer at heart. If thinning is not practiced the returns from the peach crop are seriously reduced as it is only the first-class peaches that pay much of a profit after all of the miscellaneous production and selling costs are deducted from the returns.

Summer Spraying Necessary.

The best results from the peach orchard will come where summer spraying is practiced. The brown rot and the plum curculio ruin many peaches every year and the fruit which shows spots of the brown rot or the gummy exudations from curculio stings meets with disfavor on the best market. This summer spraying means another charge against the peach crop, but experiments prove that it pays. The Department of Agriculture have conducted many experiments along this line and some of them in Michigan orchards. At one time I assisted in some of these experiments at Benton Harbor and the results of the summer spraying were very apparent on the fruit. The color even seemed to improve and the peaches showed no signs of the rot or the curculio stings. The best point of all was the fact that these sprayed peaches seemed to hold up after reaching the consumer's home much longer than fruit which had received no spraying. The necessity of this summer spraying does not appeal to many fruit growers, even in the fruit belt, but it seems as if it will soon be one of the necessary operations on every peach farm. Of course, it costs money and again emphasizes the fact that the commercial peach farmer is up against



After the Bush has Been Trimmed.

a constant trail of bills from the beginning to the end of his campaign to produce first-class marketable peaches.

Ingham Co. R. G. KIRBY.

TROUBLE DEPARTMENT.

Grafting Wax.

Please tell me how to make a small amount of grafting wax.
Clinton Co. A. G. S.

A very good grafting wax can be made as follows:
Resin four parts; beeswax two



Steady
Those Nerves!

If it's caffeine—the drug in coffee—that's causing shaky nerves, the remedy is perfectly plain—

Quit coffee, and for a pleasant, healthful table beverage, use—

POSTUM

Postum is a delicious cereal drink, pure and nourishing and absolutely free from any harmful ingredient.

There's a big army of Postum users who are enjoying better health and comfort since joining the ranks.

"There's a Reason"

parts; tallow one part. Melt all the ingredients together, using care to prevent boiling. Pour the hot mixture quickly into a pail of cold water.

With greased hands flatten out the spongy mass beneath the water so that it will cool uniformly. Permit it to cool and get tough but not brittle. Remove from the water and pull like molasses candy until smooth and fine grained.

Before using, a chunk the size that you think will be sufficient for your work should be broken off and worked up in the hands until soft and pliable.

THE SPRAY NOZZLE.

The subject of nozzles could form a chapter by itself, not only as governing the pressure, but in its adaptation to the work at hand. Pressure can be maintained, other things being right, only by limiting the nozzle capacity. The nozzles choke back the flow of liquid, and if the spray does escape too freely the nozzles must be reduced. The number of nozzles carried furnishes no very definite criterion as to the amount of liquid delivered. It is a principle in geometry that a square described on a given line has four times the area of a square described on half that line. The same principle holds true in circles, and a nozzle with a given-sized opening will deliver four times the quantity of another with an opening of only half the diameter. The openings in nozzles wear rapidly, too, and the delivering capacity increases very fast in this way. If the pressure is not maintained, one of the things to look after is the nozzles to see if the openings have not become worn. But it is well to carry sufficient nozzles so that the liquid doesn't have to escape through the relief valve. It is economical to use about what spray the pump furnishes, and the relief valves wear rapidly when they are constantly in use.

Types of Nozzles.

It is of vital importance to have nozzles adapted to the work in hand. Nozzles may be divided into two classes, those making a fine mist-like spray, and those making a coarser spray but carrying the liquid farther. Unquestionably the first class, those which make a misty, funnel-shaped spray furnish the most ideal spray and for smaller trees which can be reached by them are the proper ones to use, but they do not carry the spray over to six feet unless the wind happens to be favorable, and not so far as that if the wind is in any way opposed, and it is not feasible to reach the larger trees with them even with long extension rods. For large trees of all kinds some kind of nozzle with more carrying capacity is required, although these make a coarser spray. They are also more practical where, as is most often the case, the wind is more or less contrary. The Bordeaux or the calla nozzles are good ones of this class, and there are several special nozzles that do very good work. Nozzles don't cost much and where a person has orchards of different sized trees, like apples and peaches, or some large and some small apple trees, it is well to have both kinds of nozzles on hand. Theoretically the angle nozzles are ideal for forcing the spray down into the calices of the blossoms, but practically when it comes to reaching large apple trees the dope has to be carried so far from the nozzles to reach all parts of the trees that we have never found any use for them. We make no quarrel with those who like them.

Where more than a single nozzle is carried on a pole, as is usually done with power, two styles of connections are used, one in the shape of a Y and the other U-shaped. The former are good with the misty nozzles, but with those carrying the spray to a greater distance the U is preferable, as the Y spreads the spray too much.

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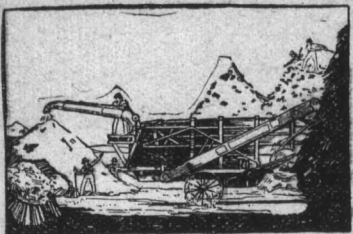
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Azoturia

By G. H. CONN, V. S.

THIS condition is usually spoken of as Azoturia by veterinarians, and also by many of the laity, but in some sections it is commonly spoken of as "Crick in the Back." There is no other disease that has as many terrors for the horse owner and the veterinarian as has azoturia. Veterinarians are able to diagnose the condition in practically one hundred per cent of cases, but out of one hundred veterinarians it is doubtful if you would find ten that would agree on just what was the cause of the condition, and among this number you would find just as much variance in the treatment of this condition.

There are several features that stand out prominently in clinical cases of this disease, that make it quite difficult to get at the real cause of the trouble. Most veterinarians have until the last couple of years held to the toxemia theory, that is, they thought that it was caused by the absorption or taking up of the circulation of the body great quantities of poisonous materials that are to be found in the body when the excretory organs, such as the bowels and kidneys are not working properly. This theory will not stand investigation because any poison that would be so severe as to render a horse so completely helpless in such a short time would not abate so rapidly as this condition sometimes does, nor would it do so without any treatment. Yet we see many mild cases of azoturia that would recover in a few hours without any treatment at all.

This disease is a cold weather disease as we see much more of it during the cooler months of the year, and very seldom during the hot months of the year. It usually occurs after a short period of idleness and usually in young growing horses, but does occur in older horses. It is much more severe as a rule in city horses than it is in country horses, which is due, no doubt, to the more concentrated feed that they receive, and the more violent exercise that they receive. In city horses it many times comes on so suddenly that the driver has had no warning of it and the horse suddenly goes down. In country horses, however, you will usually have ample warning that it is coming on, as the symptoms appear before the disease is well established. A larger number of city horses die in proportion to those affected than do country horses.

Why Immediate Attention is Necessary.

It remained for a western veterinarian to announce a theory that seems to be the best that has been offered to date, and one which will stand investigation pretty thoroughly. This they have termed the mechanical theory.

The horse at rest is many times fed rich nitrogenous feed that makes the blood thick and heavy. The circulation becomes sluggish, due to the lack of exercise. The great amount of nitrogenous material in the blood will make the muscles of the blood vessel walls flaccid and weak. They do not have their normal elasticity. While on the other hand the nervous system is stimulated and the horse is feeling exceptionally good. You rarely see a horse come down with azoturia that did not feel better immediately preceding the attack than he has for some little time. The horse is taken out to work or for use of any kind and since he is feeling so good and his nerves are stimulated so highly, and the blood vessels are weaker than usual the exercise that he receives for the first few minutes causes his heart to work much faster than usual and in fact, the horse will work the heart more in a few minutes than it would ordinarily in a much longer time, thus it pumps large quantities of blood into the blood vessels that are not in shape to handle

this large amount of blood and this makes the animal very excitable and brings about a paralysis of the particular muscles in which this blood has stopped. Most times if the animal is stopped when the symptoms are first noticed a rapid recovery takes place as the vessels rid themselves of the large amount of blood and in a few hours the horse is normal. If, however, rest is not given at once, the vessels become totally unable to remove the large quantities of blood that was pumped into these parts and it is only a matter of several hours until it has coagulated and then the animal dies with symptoms similar to apoplexy.

Varying Symptoms of Azoturia.

Azoturia usually manifests itself in a number of ways. Some horses will act very much like a horse with an attack of acute indigestion and will look around at the flank occasionally and show quite a little pain, and even get up and down a few times. Others will show an affection of the muscles of the fore limb or of some other group of muscles. Many of them will show a marked lameness in one hind leg and rarely in both, together with a marked swelling of the muscles over the loins. Some horses are so very nervous that it is almost impossible to give them medicine by way of the mouth.

Now, in city horses they almost always go down, even with all that the veterinarian may do. But the cases in the country are more mild and many of them, if receiving good care and attention will remain upon their feet throughout the attack. The animal that does not recover enough to get upon its feet at the end of forty-eight hours is very apt to die. The majority of those that recover will get up at or before the expiration of twenty-four hours. A few will remain down for several days and then recover, but these are exceptions to the rule.

Treatment at the Time of Attack.

Horses that go down with this condition should not be put in slings, neither should they be raised up in them, as it does more harm than good. Horses that are down should be turned over every three or four hours. Horses that can not get up with the aid of a couple of strong fellows lifting on the tail, very rarely get up or stay up very long, even when slings are used. When the attack is coming on do not fight the horse in an effort to keep it on its feet, because the exertion that you cause it to put forth in trying to stand will only aggravate the condition. If the horse wants to lay down, let it do so, and then make it as comfortable as possible. Rest is the most essential thing in the treatment so stop the animal as soon as something is noticed to be wrong, and keep the animal as quiet as possible. Do not try to make some town or some barn, but stop where you are and if necessary blanket the horse, but above all, keep him quiet.

Preventive Measures.

Horses that are lightly exercised and then rested for thirty minutes before going to work after a short period of idleness, do not get azoturia. This light exercise stimulates the circulation and thus no clogging of the blood vessels occurs and the azoturia is prevented. Horses in which the grain ration is very much reduced during the idle period and whose bowels and kidneys are kept working free from being fed properly, very seldom contract this disease. Horses that have been idle for some little time, if they do get this will have a much lighter attack than those horses that have only been idle for a day or so. Mares do not have the disease as severely as do geldings and the percentage of recoveries is much larger in them than it is in the geldings.

It has been the common belief with many people that the urine of animals that are affected with azoturia is always dark colored, but such is not the case. For the first several hours

the urine may be almost normal in color, but if the animal does not recover very rapidly at the end of a few hours the urine is found to be dark in color, sometimes being almost as dark as coffee. Many people are of the opinion that it is necessary to always draw the urine as soon as the veterinarian arrives on the scene, but we seldom follow this procedure any more and we feel that our results are just as good, if not better, than they were when we followed the other practice of always drawing it early in the attack. It has been our experience that if you get the animal comfortable and resting as it should, that it will be only a matter of an hour or so until it will void the urine of its own volition.

When the animal is known to be susceptible to this condition or when it shows by its actions that something is wrong, especially if it has been idle for a day or so, and if it has been feeling exceptionally good for the first few minutes after starting to work, then suspect azoturia and stop the animal at once and keep it just as quiet as possible. Send for a veterinarian as once in a while a case that looks very mild may seem to be getting along very rapidly and all at once take a relapse and go down. Do not take any chances, as they are sometimes the cause of the loss of a valuable animal.

If you have an animal that is susceptible to these attacks cut down the grain ration one-half or more when the animal will be idle for a day or so, and then give some exercise every day. If perchance a day or two must be missed, before using again, exercise for a few minutes and then place in the barn and let the animal rest for a half hour. Keep the bowels free by the use of oil meal or bran.

There is no treatment that is specific and the proper care and attention that should be given by the owner early in the attack and then the care through the attack will many times contribute more to the recovery than anything that could be done.

ACTIVITIES OF MICHIGAN FARMERS.

Directors of the Charlevoix County Agricultural Society met at East Jordan, appointed division superintendents and made other arrangements for the fair to be held this year, September 25-28 inclusive. Reports show a balance of \$228.99 on hand. D. L. Wilson was re-elected secretary.

The Saginaw County Farm Bureau met at Saginaw and re-elected officers. It was voted that all dues paid for 1917 be returned to members in the form of improved varieties of seed for experimental purposes. These seeds will include the Grimm alfalfa, Red Rock wheat, Worthy and Alexander oats.

Farmers held a well attended meeting at White Cloud and re-organized the Newaygo County Farm Bureau, with the following officers: President, T. I. Frye, Fremont; vice-president, Joseph Rosema, Garfield; secretary-treasurer, Herman McKinley, Grant.

The Isabella County Fair Association held its annual meeting at Mt. Pleasant and re-elected officers. A five-day fair will be held this year and the tentative dates are September 11-15.

L. L. Thomas, of Petoskey, is the newly elected secretary of the Emmet County Agricultural Society, the premium list for the 1917 fair has been enlarged and efforts will be made to have a record-breaking affair.

W. J. Orr, of Saginaw, president of the Michigan Bean Jobbers' Association, is predicting that Michigan farmers will plant 700,000 acres of beans this year as compared with 450,000 acres last year.

Kent Co. ALMOND GRIFFEN.

The Michigan State Fair will be held at Detroit on August 31 to September 9, inclusive. Live stock will be held one week only, September 3-8.

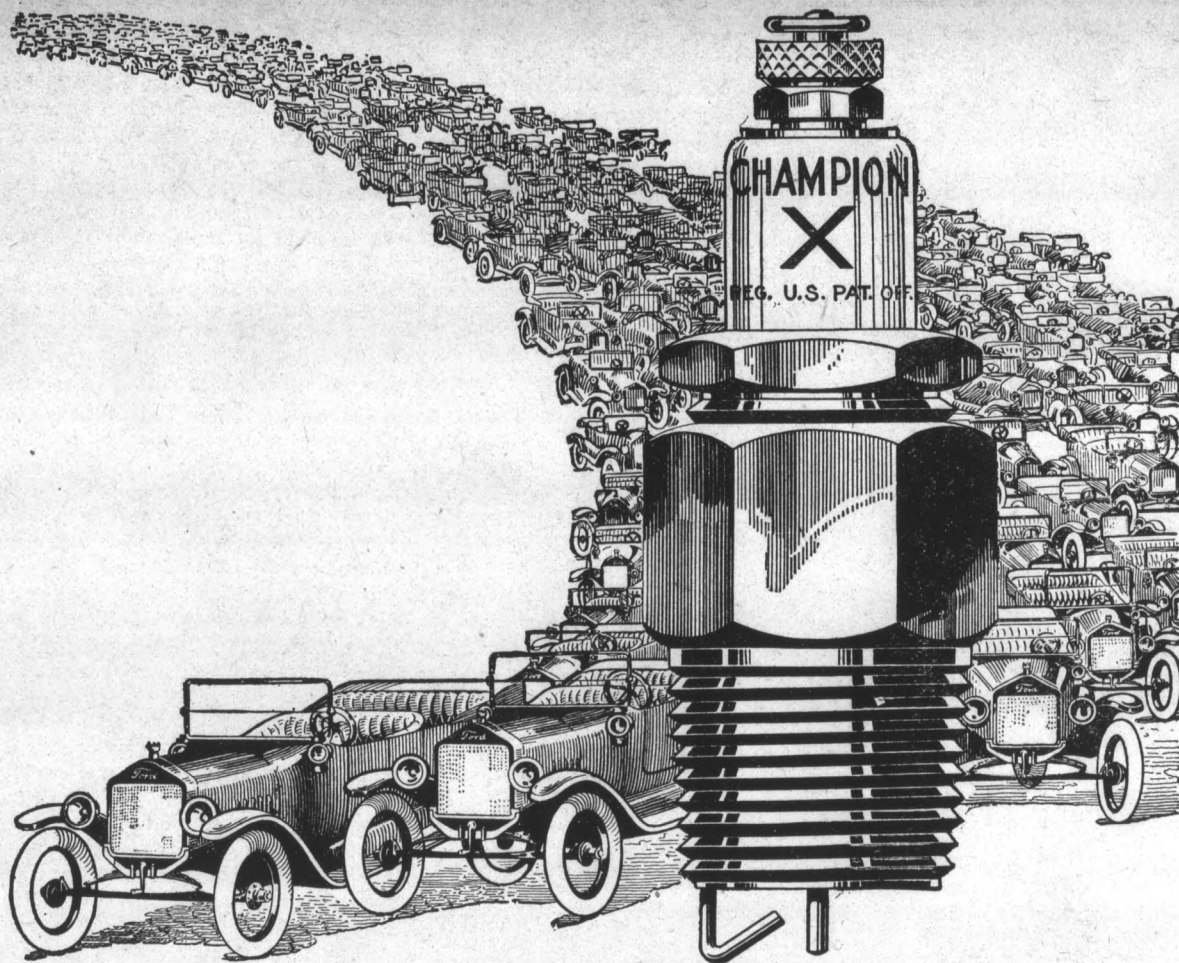
LIVE STOCK PROSPECTS.

Never has there been a time in this country when live stock men were in such an independent position as today, with the serious shortage of all kinds of stock pointing unmistakably to continued high record prices. Corn selling in feeding districts around the dollar mark and on the Chicago market around \$1.13 a bushel is certainly going some, and yet experienced stock feeders say it can be made to pay well. Consequently, stock feeders have been buying corn on farms in their neighborhood at higher prices than could be obtained by marketing it. Numerous farmers have been planning to restock their pastures with cattle as soon as pastures are in good shape once more, and considerable numbers of stocker and feeder cattle have gone out from Chicago and other western markets, but inadequate offerings of the better class and extremely high prices check the movement to a marked degree. As is generally known, the packers have been for a long time in the habit of outbidding country buyers for fleshy feeders of the better class, such as can be fattened in a comparatively short period, and this cuts severely into the future supply of fat beefs. Furthermore, the packers have contracted for huge quantities of tinned meats of low prices for sale to the allied powers, and this brings out a large demand for canners at far higher prices than were ever paid in former years. As usual, most of the cattle marketed are ordinary in quality, and prime heavy cattle and prime yearlings sell at record figures all the time. Even canners and cutters bring higher prices than finished beef cattle have done in a number of past years. Word comes from southern Texas that small shipments of cattle this spring to Oklahoma pastures are probable, with two-year-olds and aged steers at \$60 to \$75. Short-fed and warmed-up cattle have comprised most of the wintered cattle shipments, and few prime beefs are left, most of the cattle fed in Iowa, Nebraska, and the two Dakotas having been marketed. The cattle raising industry has increased from 20 to 50 per cent during the last three years in Wyoming, the two Dakotas, Kansas, Nebraska, New Mexico, Colorado and Washington, according to official returns furnished by the federal government; and yet Pacific coast buyers have been buying cattle this spring as far east as Montana and Texas, something which never has happened before. The best Colorado beef-fed cattle were marketed earlier than usual, and few are now left. The average farmer shows a disinclination to engage in fattening cattle for the market, and Thomas Rust, of McLean county, Illinois, maintains that carrying cattle in the feed lot requires advances of 75 cents a month in market values, if dollar corn is used in fattening them.

GENTLING THE COLT.

To raise a hind foot, put on a rope as on the front foot and draw the foot forward. To put a rope on the hind foot of a wild horse, tie up a front foot, have the assistant hold his hand over the eye on the same side as the foot to be lifted, or take the headstall in one hand, the tail in the other, and whirl the horse until he becomes dizzy. While in this condition he may be handled with safety. Lift the foot forward two or three times and gentle it. As soon as the horse gives in, carry the foot backward into a shoeing position and trim the hoof.

A short time ago 17 head of 1317-lb. steers from Iowa sold on the Chicago market for \$12.10 per 100 pounds. They were bought on the fifteenth day of last August in Omaha, when they averaged 902 pounds. They were put in a good blue grass pasture until October 15, and were then put in the feed yard and fed for a month on ear corn and two months on corn and stover. The last five weeks they were fed ground shelled corn and all the clover hay they would eat.



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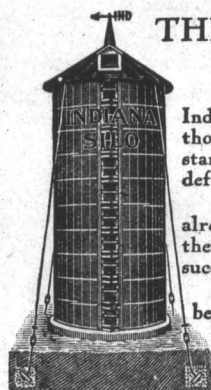
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The Care of the Dairy Calf

THE dairy calf should be developed for the purpose for which she was born into the world. It is highly important that this purpose should be in the mind of the man who cares for her. One reason why so many men fail in the proper growing of their calves is that they do not realize their possibilities. Many calves are not worth feeding; the best feeder in the world could not make profitable cows of them. The first demand on behalf of the dairy calf is that it should be well born, but if the breeding is right, then it is deserving of good care, and the higher appreciation its owner has of its possibilities the better he is prepared to do justice by it along all possible lines of development.

Whole Milk Essential.

The calf should first have whole milk. Dr. McCallum has proven beyond any question that no other fat in the world except that found in eggs will take the place of the fat in milk. If the milk is very rich, however, a little skim-milk may be added from the first and in any event after two or three weeks the new milk may be gradually substituted with skim-milk. It is best, however, to give a little new milk in the ration until the calf is six or eight weeks old. Many men are inclined to give too much skim-milk. There is a great difference in the amount of milk that different calves will consume with profit, but the Jersey or Guernsey calf should receive no more than eight or ten pounds per day for the first six weeks and after that the allowance should be very slowly increased with the eye of the feeder always on the calf to see that it does not get too much. Now bear in mind that the allowance of milk herein suggested is for the average calf. There may be one found now and then that will consume a good deal more and pay for it in rapid growth, but these are the exceptions. It is good practice to feed the calf three times daily until it is three weeks old. The daily allowance of milk divided into three feeds will give better results than when the little animal is fed but twice.

Starting with Hay and Grain.

As soon as the calf shows a desire for roughage it should be given a little good hay, preferably clover or alfalfa. Soon after a little dry grain may be placed in a box where the calf can eat it. Sometimes calves manifest a desire for grain at first, that will lead them to eat too much of it, in which case they are apt to refuse it entirely and to give the feeder a good deal of trouble. Only a very little grain should be given the calf at first and the allowance should be increased very slowly, always being sure not to give the calf too much. Care should be used also not to feed more hay than the animal will consume in from one to two hours. The hay the calf does not eat does it no good and while it is not so bad to feed hay to excess as to feed too much grain, it is entirely useless to do so and should be avoided.

Feed Grain Dry.

It is important that the calf should eat its grain dry. It is not bad practice to scald a little linseed meal and put it into the milk, providing we let it settle to the bottom of the pail and allow the calf time to eat it after drinking the milk, but it is not necessary and it consumes time that may just as well be employed in some other way. Allow the calf to drink its milk straight and eat its grain at its leisure, taking plenty of time to masticate it and the saliva will be mixed thoroughly with the grain, insuring much better digestion. When the calf becomes accustomed to the grain there is no harm in giving it all it will clean up with a relish, but until that time comes constant care should be exercised. Almost any of the grains grown on the farm are good for a calf. There

is nothing better than corn and the calf will eat it whole quite as well as in any other way. Indeed, I have seen calves shell corn from the ear, eat it and thrive as well as any calves could. If we wish to feed it in that way, there can be no objection to it whatever. Experiments at our college a few years ago demonstrated that there is great loss in the feeding of whole corn to older cattle, but the loss was very slight when the calves consumed the grain. Whole oats, too, are excellent wheat bran and middlings are both good. In fact, as we have said, nearly all the grains grown on the farm are adapted to this purpose.

Best Roughage for Calf.

By the time the calf is six weeks old, we may begin to feed ensilage, very gradually at first, using care to see that it is free from mold. In a little while the calf will be able to consume quite a quantity of ensilage and the amount will increase as time advances. The grain fed to the calf should always depend in some degree upon the kind of roughage consumed. There is no better roughage than alfalfa hay. It is easily digested. The leaves of the alfalfa seem to contain a principle indispensable in the development of the young animals and not present in other roughage, but alfalfa hay alone, is not good for a calf. Taken in connection with skim-milk the ration is too narrow, that is to say, the amount of protein as related to the carbohydrates and fat is in excess of the demands of the animal. This condition is corrected by the feeding of ensilage and grain like corn, rich in carbohydrates.

Keep Calves Growing.

Now these calves should be kept growing all the time. They should not be crowded like calves designed for baby beef, but they should be kept growing. They should be fed plenty of good feed in which the nutritive ration is right. If calves come in the fall, the grain may be omitted in the fore part of the summer after they are accustomed to grass pasture, but the time in which a calf changes from a winter ration composed of skim-milk, grain and excellent roughage eaten in the shelter of a comfortable stable, to pasture grass consumed too often in wind and rain, is a critical time and the change should be made gradually. The calves should be turned out day-times at first and sheltered nights and some grain should be fed until they are accustomed to the out-of-doors, then if the pasture is good, the grain may be omitted as we have said. The Jersey or Guernsey heifer may freshen at two years or a little older. The Holstein may well postpone the beginning of the milking period until two years and a half old.

Feed Carefully at Freshening Time.

If freshening is to occur during the winter, a substantial grain ration should have been fed for some time previous. Remember, the thing we want to do is to develop this young cow so that she can yield milk in a profitable quantity. If we have fed her liberally the second winter and she has been on good pasture during the second summer, she is a beautiful animal. Now, if we begin to feed her grain about three months before she freshens and gradually increase the ration until she is consuming four or five pounds of grain per day, with ensilage and good clover, the machinery for the production of milk will have been fully developed. For a few days after freshening, we are going to be very careful with her. For three days we will give her no grain at all and then only a little, very gradually increasing the amount as the days go by. Now the quantity of grain that she will consume after the first three weeks have passed, will depend upon the amount of milk she gives. A pound of grain per day to every three or four

pounds of milk produced, according to the richness of the milk, is a very good rule. Still there are many exceptions to this rule. When roughage is very cheap, as it is this winter, and grain is expensive, it is profitable to feed an excess of roughage and a smaller ration of grain. Always watching the individual cow to see that she is not over-fed. At the same time weigh and test the milk that we may know what she is actually doing and thus be able to feed her enough to produce the milk and maintain her body.

Method of Application Most Essential.

Now, this is the theory, the success in its application will depend upon the man. The longer I live, and the more I see of Michigan and its dairies, the more do I value the individual man in the success of any program of development. It is a great thing to be able to develop a dairy. The man who can do it is worthy of confidence and respect.

W. F. TAYLOR.

PROTEIN AND MILK PRODUCTION.

A great many dairymen and farmers are laboring under the delusion that, if a cow consumes plenty of protein, all is well with milk production. While protein is one of the most essential elements in the daily rations it is by no means as important as is usually thought. Carried a little to extremes, a cow would lose too much weight, if she did not actually starve on it. A cow should have a sufficient amount of fat on her to provide for her maintenance and protection from cold as well as the stuff that enters into the milk product. The means, as well as the ends, should be considered for the normal milk flow. Extremes of all kinds are to be avoided to insure the greatest profits.

While a cow can be treated somewhat like a machine, yet she has her limits and it is well that her feeder recognizes them. She can be broken down as well as actual machinery. To know the possibilities of a cow one should well know how she is constituted. It is also well to study the individualities of cows. Different cows may require different treatment. Every herd of cows should form an experimental dairy in itself. There should be an actual account kept with each cow. Charge her up with the cost of food and give her credit for every pound of milk produced. Let her mature pay for the trouble. In so doing you can see from time to time how you are succeeding with each cow. If deemed necessary to change the food, that can be done intelligently. You will find that it is best to vary the rations to conform to weather conditions.

Variety is Best.

Nature did not intend that the cow should subsist upon one food alone. No matter how well relished the particular food at one time, a change of diet is necessary. As a rule no one article of food contains the right proportion of protein. While milk is rich in protein as well as its direct source, the cow, yet a certain amount of carbohydrates and fat should be carefully considered. To feed a certain amount of protein regardless of the quantity of the other elements is erroneous. That error results from the one food diet or when two or more foods are wrongly combined. The central idea of correct feeding lies in proportion. Correctly proportion the different elements of the rations and the cow will do the rest.

While the writer does not believe in any particular standard of feeding, yet some standard or system should be adopted. The best recognized standard on earth, not excepting the German, should only be used subject to change. At best any standard only recognizes average conditions. The standards, as recognized by the agricultural department, range in nutritive

ratios from 1:6.6 to 1:4.4, according to the amount of milk each cow is supposed to produce. By this it will be seen that the least protein results in the lowest milk production, while the narrowest ratio calls for the highest. It is a debatable question whether it is best to feed the ratio, 1:6.6, twelve months of the year regardless of climatic or weather conditions. I think the cow would be more comfortable during a zero spell with more fat. She might not produce quite the normal milk flow but she would be more comfortable on a wider ration. There is but one way to feed the extreme narrow rations and that is to maintain the temperature of her stable according to that of the average summer.

Correct Proportion Necessary.

Many farmers are anxious to know just how much to feed a cow to insure the greatest milk flow. I firmly believe the cow is the best judge about this matter. In fact, she exercises better judgment about quantity than do human beings. She has sense enough to stop when she has enough. Show me the man, or woman, who will do this. The only way that you can assist the cow is to place before her twice daily all the food correctly proportioned that she can eat. If she will overeat of this combination, it demonstrates that she is poorly constituted. The time when she is likely to overeat is when there is too much protein in the food. She will eat, eat and eat to get something that her system requires and may finally get enough carbohydrates and fat, at the same time have more protein than necessary, that can only become a source of burden and poison to her system.

Have a Standard for Feeding.

There is no question that the health of the cow has much to do with the normal milk flow. The health can be no better maintained than by feeding a well balanced ration. Adopt a standard. Vary this standard to meet all conditions. You may start by taking for your standard the ratio of 1:5. Watch results. If satisfied with the milk flow, maintain this standard. If not, and the weather is growing colder widen your standard as 1:5.1 or 1:5.2. Always make the change gradual. If the milk flow is unsatisfactory and the weather is growing warmer, narrow your standard as 1:5.9 or 1:4.8 or 1:4.7. The warmer the weather the greater the amount of protein that can be fed. The colder the weather the greater the amount of carbohydrates and fat you can feed. The milk flow can be adjusted in the manner the same as the heat of the greenhouse can be regulated.

The suggestions submitted takes for granted that the farmer is able to figure his rations or has access to a friend or neighbor who can do so. I am sure that what has been said put into practice will greatly add to the profits of the milk business.

Wayne Co. E. W. Good.

DAIRY PROBLEMS.

Alfalfa Meal.

Is the following a balanced ration for dairy cows? Protein 20 per cent; fat three per cent; fibre 18 per cent; carbohydrates 35 per cent. Ingredients are cottonseed meal, bran, corn, alfalfa meal and molasses. I have nothing but timothy hay for roughage.

Osceola Co. J. H.

Alfalfa meal, or alfalfa hay, is certainly good feed for dairy cows, and it would be a splendid thing if you could buy some near home to feed in connection with your timothy hay, but I wouldn't advise you to pay freight on alfalfa hay or alfalfa meal from Omaha, Nebraska. This meal is nothing except alfalfa hay ground up fine. There is no particular advantage in grinding it for cows; they can do their own grinding and save the expense. It doesn't make it one bit better to have it ground.

I would suggest that if possible you

buy some clover hay to feed in connection with your timothy. You could at least sell some of the timothy and buy some clover which is better for the cows. I would feed fresh cows a grain ration. This alfalfa meal won't take the place of corn meal, oats and wheat bran. Alfalfa is a roughage. What you want is a concentrate to feed in connection with your roughage. Corn meal and bran mixed equal parts by weight would make an excellent grain ration to feed. In addition to that, if you would feed about two pounds of oil meal per day you would have quite a satisfactory ration.

If the cows haven't been used to having a grain ration, you should commence feeding only a few pounds a day and gradually increase the corn meal and bran and also the oil meal, but I don't think it is necessary to feed over two pounds of oil meal per day per cow. My judgment is that this would be a much more satisfactory ration than alfalfa meal to mix with timothy hay.

This Summer's Cow Pasture.

I have a field that is seeded to clover on the north half, and the south part was in corn last year. I wish to use the whole field for cow pasture this year. What can I sow on the south part that will make good pasture? It is a cobble stone soil.

Calhoun Co. R. M. B.

It is almost impossible to sow any kind of seed this spring that will make a satisfactory cow pasture the present summer. It takes longer to establish a pasture. This half of the field that is not in seed at present will not work very well in with the other half already seeded to clover because the clover will be ready first for pasture. As a matter of fact, new seed clover is not in the best of condition for pasture. We ought to have a heavier sod. We ought to take longer to establish a pasture. The cows tramping upon this new seeding will destroy much of it; it is not sufficiently rooted yet so but what some of it will be pulled up as it is eaten by the cattle.

I would suggest that you seed this land to oats or winter rye and at the same time with a mixture of grass seed and also Dwarf Essex rape. The oats or rye will come on first and can be pastured down. Some of this will be destroyed by tramping. The rape will grow immediately and some of this, too, will be destroyed. Then the grass seed, if it isn't pastured too close, may afford some very good pasture later in the season, providing we have a proper distribution of rainfall this summer.

In seeding this you ought to be quite liberal with the seed as you want to get a thick stand. I would suggest two and a half bushels of oats or two bushels of rye, six pounds of Dwarf Essex rape, six pounds of common clover, three pounds of timothy, and two pounds of alsike clover per acre, and seed it as early as the land will do the work.

COLON C. LILLIE.

KICKING COW CAN BE CURED.

The kicking cow is easily cured by the proper methods. To cure the offending animal take a rope with a loop in one end of it or a trunk strap and pass it around the body of the cow. Draw it tight. The cow usually will jump a little at first, but when she finds she cannot get out of the rope she will stand—and cannot kick. If this method causes the cow to give bloody milk, place the rope or strap behind the udder and draw it up in the same manner. With some cows this cannot be done because of the shape of the udder. Another method is to hobble the cow by passing the rope around each leg behind the udder, and tying just above the hocks. This is rather dangerous for the man tying the rope. After the preventive measure has been repeated several times the cow will stand readily to be milked.

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How to Buy Dairy Feeds

By W. F. TAYLOR

THE fact that certain commercial dairy feeds are bought and fed to good dairy cows at a profit, induces many men to invest in them largely each year. Quite as many people buy feeds who are not sure what they need, nor what they are receiving for the amount invested. They buy because they feel that they must do something to make the cows give more milk if possible, and it must be admitted that some buy with no great hope of profit, but simply by the law of suggestion, that is, they buy because others do.

But the purchasing of dairy feeds is largely on the increase, until the amount bought at present is enormous. A little of it bought directly from the manufacturer, or the large dealer, but by far the greater part is purchased at home of the local dealer. There are two objections to this practice, and I want to call the attention of the reader to them here. The first objection is, that the dealer is not a dairyman, and since he is not, he probably knows just about as much about our business as we know about his. This being true, it should be clear to us that he is a very poor judge of what we ought to buy. There are thousands of tons of feed bought each year of the dealer at a long price that return no profit, but on the contrary are fed at a loss, because they are not the feeds that are needed under the circumstances. Again not knowing the business, the dealer is often induced to pay too much for some particular kind of feed that is known only by the company wishing to sell it.

Last spring we were unloading a car of commercial feed of unusually high quality. While we were at work a traveling man came along and tried to sell us a car of a new feed, or rather, of an old feed with a new name. He wanted \$32 a ton and we were delivering ours to the dairymen at \$28.50. A hundred pounds of our feed was worth a hundred and twenty-five pounds of his, but had our people not known more about such matters than the average dealer, we might have done as many of them were doing—we might have listened to his story and paid by far too much for an inferior article.

The other objection is, that feed bought at retail costs too much. The dairyman is a manufacturer. The feed he uses is his raw material. Did you ever hear of a manufacturer succeeding by buying his raw material at retail, and selling his finished product at wholesale? The dairyman is forced to sell his product at wholesale in most cases, and if he retails it himself he always does it under difficulties that consume much of his surplus profits. It is therefore his right, and it is also his duty to buy his feed just as cheaply as he can.

Do not understand me to find fault with the dealer because of the prices usually asked for feeds handled by him. Sometimes he asks too large a profit, but usually he does the work as reasonably as he can. There are a great many people who feel that they must buy of him, and I have nothing but good will for him. When I get in a car of feed for myself and the neighbors, I always furnish the dealers in our little town. I want them to get the feed just as cheap as they can, because the cheaper they buy it, the less the people who deal with them will have to pay for it.

Surveys taken within the last year, in the dairy districts ought to satisfy any thinking man that dairying offers poor chances of getting something for nothing. Little wonder that so many people can not understand that it pays to feed the cow liberally, when they

are paying from three to five dollars a ton more than they ought, for what they give her.

There are a number of satisfactory ways of purchasing feed direct. Where there is a local creamery, the creamery can handle the feed as well or better than to attempt it in any other way. Our creamery buys a great deal of feed for the patrons each year, and saves them a very nice little sum of money. If there is a co-operative association in the community, or a cow testing association, the association may buy the feed. Again, if there is a man in the neighborhood who will give intelligent study to the matter, who will keep track of the markets, and in all ways try to serve the community, such a man may buy the feed in carlots for his neighbors, charging just enough to pay for the service rendered, and no more.

The writer is speaking now from experience, for he has done much of this work. Fifty cents a ton is enough to pay for the trouble of ordering and delivering feed, if the purchasers always pay cash. Right here is the key to the situation. They should pay cash. They must do so if feed is to be handled at fifty cents a ton, and the business is to continue. A few days ago I was talking with a man from another part of the state who handles feed for his neighbors. He sells at an advance of a dollar a ton. He does not always get cash for the feed. He freely admits that it can be done for fifty cents if the terms are cash, and I am sure that otherwise, his charge of a dollar is not out of the way.

But right here is the difficulty. Every man who does pay cash, has to pay an additional fifty cents because someone else gets trusted. It would be better all around if each one paid cash, even though the money must be hired.

The first thing to do if we would have the advantages of direct buying, is to unite in our purpose to buy our feeds together. It does not matter so much how we get at it. If there is a creamery in our community, the creamery can handle it. A co-operative company can do the work as we have said, if there is one near by, and if there is not, then we should look for the right man to do the work and co-operate with him as long as he serves the interests of the community.

The dairymen may make an arrangement with a local dealer to handle the feed and pay him a sum agreed upon for his services. But if this is done the dairymen should not forget their responsibility in the matter. The dealer has so many lines to keep watch of, that he of necessity can not know as much about the feeds we should buy, or market conditions, as we may know, providing we know our business as well as we ought, hence we should inform ourselves and then tell him just what we want.

Every dairy community should buy its feed direct. If such communities will get together, study the feed problem, instruct some individual or organization to buy for them, keep track of market conditions, and ever and always be ready to pay cash when the car of feed arrives, hundreds of dollars may be saved to a single community each year, and valuable lessons in co-operation will be gotten.

This is not all. The subject of feeds and feeding will receive much more intelligent consideration. People who are buying feeds together will compare results and get valuable information from such comparisons. As the seasons pass and the feeds grown at home fail in part, thus demanding changes in the grain ration, the dairymen will talk about it, and there will always be someone who will know what ought to be fed under the circumstances.

Extending Cooperation

By JENNIE BUELL

WELL, guess everybody's satisfied! They ought to be!" "Yes, that's so!" Such were the parting words between two farmers as they drove away from the second get-together of the Onsted Co-operative Association. And such seemed to be the universal sentiment of the one hundred and fifty people in attendance that afternoon. Apparently the day marked a lap in the Association's history that had been run successfully.

From the meeting I went up town to the co-operative store, which was easily found by the huge sign painted on its side next the cross street of the village of Onsted. Here was a double store, two stories, occupied in every available inch by goods and, at this hour, so filled with clerks and people that it was difficult to distinguish one from the other, or to extricate one's self from the narrow aisle if caught in the hustle of members who had stopped to shop after the meeting, and yet who wished to get home by chore time. Directly opposite stands the double store, fifty feet front and seventy-five feet deep, that has been rented by the Association for a term of years and into which the co-operative business will be moved in a few months. In the new building will be a rest room and a room for board and committee meetings, also shelter for teams in the rear will be provided—all much needed accessories of a store where many out of town people trade.

In the store I talked with women who were shopping or waiting, some of them from five to seven miles out of Onsted. "We have money invested in this store," one of them told me, "and so come here to trade." When asked how the other merchants looked upon the co-operative venture, one woman said, "They made fun of us at first, but now they must sit up and take notice."

Onsted is a village situated among the rich farming lands of northern Lenawee county, and this Co-operative Association was organized June 1, 1915, by the farmers thereabout. There are now one hundred and twenty-five members. These members met for their "anniversary," as they call it, at the Grange Hall, coming before noon with loaded baskets and having a genuine picnic dinner together before taking up the business. At two o'clock the audience came to order to listen to the report of the manager, F. N. Morey. His report showed that on December 31, 1915, the stock of general merchandise in the co-operative store amounted to \$12,993.08 and a year later their inventory showed it to be \$13,410.40, but during the year their sales had amounted to over \$56,000. By paying cash and thus securing all discounts, they had been able to turn their money over and over at a net profit of \$1,752.39. In the meantime they had bought \$27,708.59 worth of farm produce and sold it. One striking fact about a co-operative association seems to be that the members buy much of themselves and sell much to themselves; in other words, they literally "mind their own business." In the stock shipping department Mr. Morey reported that the Association had sold live stock to the amount of \$135,320.94 which netted a profit of \$527.27.

The report of President Daniels was significant as coming from the man in whose mind the project started and who has stood loyally by it through all the inevitable vicissitudes of its youth. He said in part: "Today we have reason to feel proud. The results we have attained justify our hopes when we started. At that time a few men met at my home and went over the matter of organizing a co-operative association through which we might transact our business for ourselves. We now see possibilities before us

that are wonderful, almost beyond reckoning; we have just touched as yet, with our work, a few items of what we may do."

The next feature of the afternoon's program was an entirely informal expression of opinion upon various lines of business—a straw vote, as it were, to ascertain if there was sentiment strong enough in any one or more directions to warrant the Association in an extension of its undertakings. First a show of hands was called for on the subject of a creamery and a fair number responded; on shipping hay, about the same number expressed interest; while there was a strong vote for buying feed together. Several other matters were talked over—such as an elevator, hay sheds, buying coal and shipping eggs.

The plan of this Co-operative association is practically the same as that of the Tecumseh Association and others, that is, when it organized it did not add another store to compete with those already located in Onsted, but it bought out one of the stores already doing business there, and engaged its proprietor to become the Association's manager. Reports showed that six per cent interest has been paid the members on their shares for the use of their money and, in addition, a six per cent dividend has been divided among members according to their trade with the store; and non-members have received a three per cent dividend on patronage.

The shipping of live stock was a second consideration but has proved highly satisfactory. "It has meant more than dividends," said one man, "and is considered by all a splendid thing. One man from within two miles of Adrian came here to ship stock with us." When it is considered that at the time they began to ship together there were five buyers about Onsted, one understands that this took courage and conviction on the part of the officers to start and maintain the live stock department.

The speaker for this anniversary occasion was Mr. H. J. Foreman, of Rocky Ridge, Ohio, a director of the Ottawa County (Ohio) Co-operative Association. Mr. Foreman has been a director of this association since its organization in 1904, and consequently had many valuable things to tell the younger "Co-ops" of Onsted. He related how they started in a general store project with twenty members at the outset and had only thirty-six members at the end of three years; but, when they then decided to build an elevator, they were obliged to "get busy" and secure more members and capital. They now own at Rocky Ridge and Graytown, Ohio, two stores, two elevators, two hay and two coal sheds, and last year did a business of \$450,000 at a net profit of nearly \$11,000. At present they have a membership of 337 and are building a large cement block store which will have modern equipment for conducting their business. They have kept the same manager during all this period, starting him in at a salary of \$75 and now paying him \$150 per month.

One of the interesting features of Mr. Foreman's talk was the fact that, although their business has multiplied again and again during its thirteen years and is now located in two towns, with all departments in each town, it is still managed by one board of seven directors and employs but one manager. He pointed out very forcefully what a great saving in running expenses this arrangement means.

The high prices of animal fats are forcing the manufacturers of soaps and other products in which these fats have been extensively used, to resort to cheap vegetable oils and soy bean oil.



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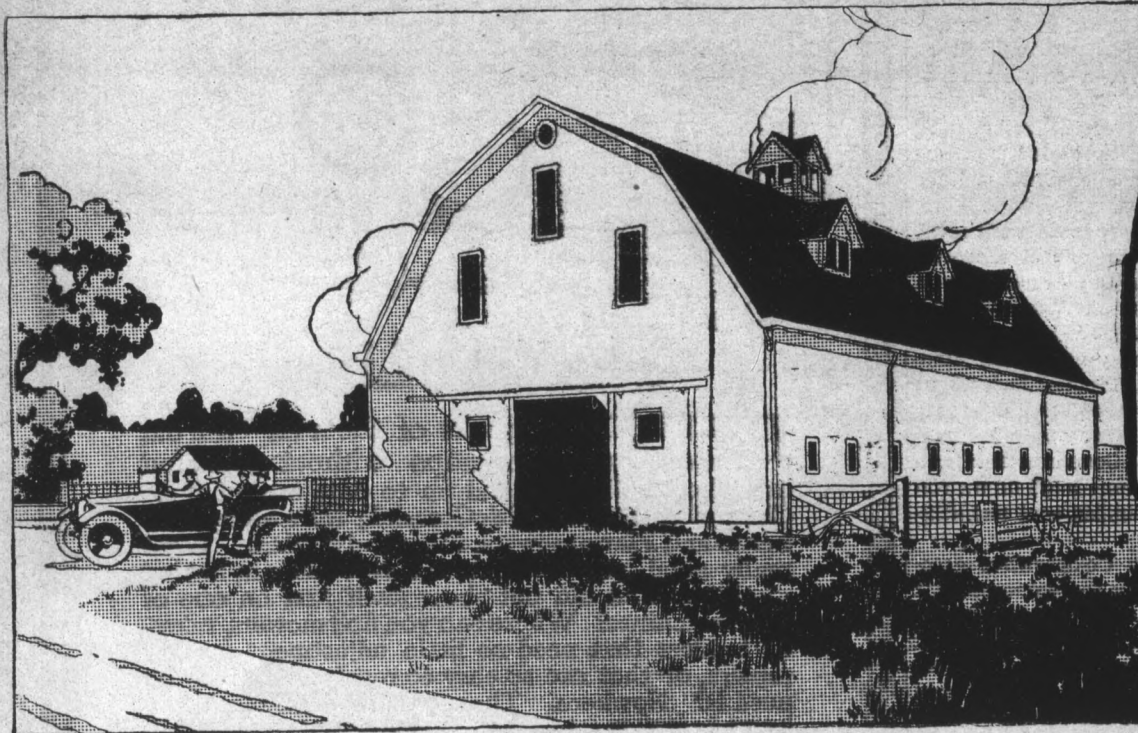
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And we could do it honestly, for that is our profound conviction.

But we prefer that you get your information from less interested sources—from sources you know are unbiased, and uninfluenced by any consideration save the character of the tires themselves.

We prefer that you get it from people right around you—from your neighbor, and the fellow farther up the road—from any of the motor car owners in your township.

So we suggest that you ask any of these people what sort of service they are getting from the tires they use.

Compare the results enjoyed by Goodyear users as against those delivered users of other tires, and draw your own conclusions.

Doubtless this suggestion awakens your astonishment. Manufacturers are not as a rule in the habit of recommending indiscriminate and searching comparisons of their product with others.

But Goodyear recommends it with supremest confidence.

For we know that the materials and

makeup of this tire are of the highest and most efficient character it is possible to put in such a product.

And we know that the skill and precision of the men and machines in our factories are given without reserve to the unqualified goodness of this product.

That it will serve far beyond ordinary capacities we feel with the deepest certainty.

And supporting our belief is the fact that today Goodyear Tires are bought by more motorists than is any other brand. These motorists would not buy Goodyear Tires, and continue to buy them, if they did not offer conspicuously better value.

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Magazine Section

LITERATURE
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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

EX-MAYOR GAYNOR of New York City, in addressing the graduates of a public school said: "Go out and hire yourselves to farmers; it is the best opening I know of. It is healthful work. Would you rather be perched on a stool or selling calico than be a free man on a farm? Which is better?"

Here we have the ex-mayor of the metropolis of our country giving his opinion as to the relative merits of the country and the city as to business opportunities. Statistics show that ninety per cent of the business men in our large cities fail, but I believe there is no reason why such a large per cent should fail in the country. If a young

Social Regeneration vs. Farm Help

By PROF. F. E. WEST

man really means business, I think his chances of success are much better in the country at the present time than in the city. Competition in the city is very strong but such is not the case in the country. I can recall farm after farm that is lying idle and not producing anything.

The question may be asked as to why there are so many vacant places if farming is a paying proposition? I think the answer is fairly easy, it all depends upon the farmer. If one has from fair to good soil and is properly

located as to market and altitude, there will be very few failures. I recall one man who sows his grain directly upon the furrow and drags it over once. Such farming is a failure from the beginning.

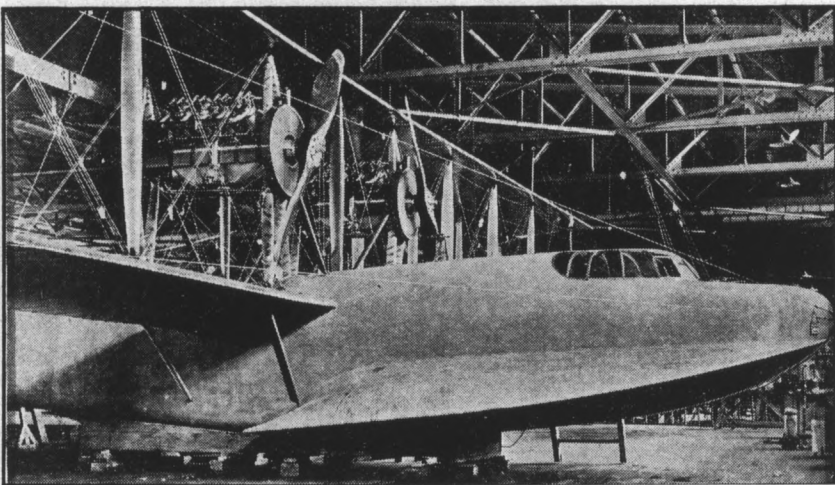
I believe that most boys from city high schools who have a mind and are ambitious and are willing to work on a farm until they learn the business and will study as hard to learn the practices of farming as they study to learn the hardware business or the drug business will, as a rule, be much

more successful in a business way and will have better health.

A few weeks ago a fine looking young man with strong physique called at my back door and wanted something to eat. While my wife was getting his meal (for fear we might be "entertaining angels unawares") I asked him why he did not go to work for some farmer. He said he would not work for any farmer as they would not pay more than \$2.00 a day and that he was going to Saginaw to get a job on the street. At this very time, farmers were advertising for help.

What is the reason the boys do not come from the cities and why will the jobless young man not work for \$2.00

WORLD EVENTS IN PICTURES



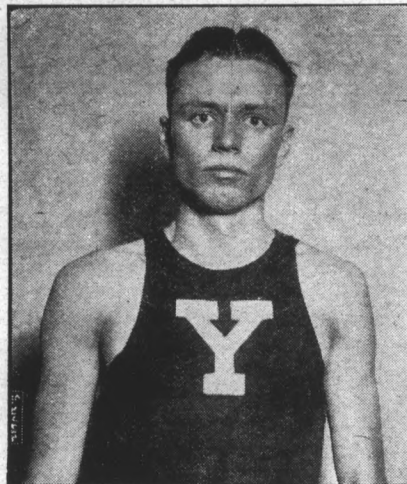
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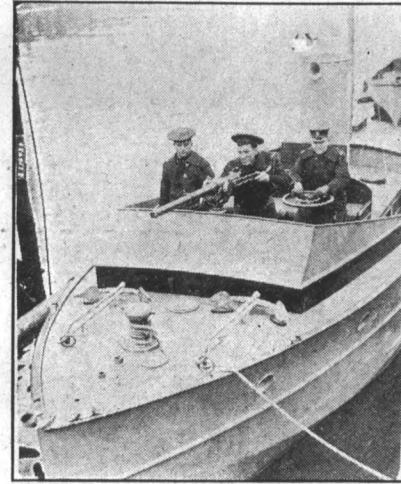
French Canadians Cheer Americans as their Future Ally.



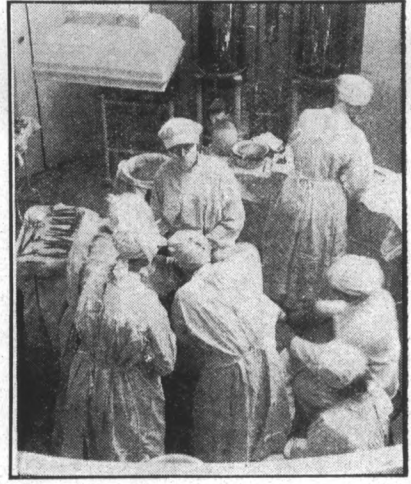
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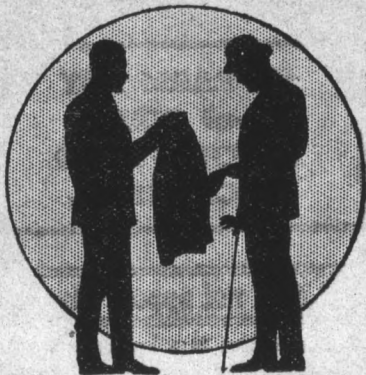


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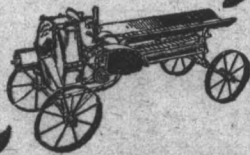
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and board and room? I do not think it is a financial problem but a social one. I think we will have to pay more attention to the social side of life by providing recreation and amusement. There will need to be the Saturday half-holiday, the picnic, the fishing excursion, the lecture, etc. The farming communities will have to put a little money into the developing of social centers. The county agent will be a valuable man for the purpose of organizing the community. Organize a ball team and let Hartwick township play Ross Lake township. Let the girls play tennis and basketball. Repair the old country church and have social functions during the week and preaching on Sunday, not by Rev. Dry-as-a-Bone, but by someone who knows the need of the country and one who loves the country and the country folks, not for their chicken pies, but for the sake of helping them. The old country church with its long benches and with the women on one side of the church and the men on the other will not meet the needs of the country today. Why not tear out the old seats and convert the church into a building that will answer

for social purposes as well as religious? I see no great harm in having a jolly social time in the church on Saturday evening and a real spiritual service there the following morning. If two separate buildings can be secured, so much the better, but in many communities the church is already constructed and the money required to build a new building might better be used in re-arranging the old building so that it will answer for both social and religious work.

To my mind the solution of the problem of farm help, especially the proper kind of farm help, will require some years and can never be settled in a day or a year. I think we should begin at once to plan for this work. The idea of working from four o'clock in the morning until late at night will have to be abandoned. In times of harvest when things are pressing we may get some extra help by paying for overtime. I know this sounds absurd to those of us who know what it means to pull the last load of grain into the barn at ten o'clock at night, but nevertheless, I think we will have to come to some such a plan as I have suggested if we are to secure permanent help.



O Risen Christ! O Easter Flower!
How dear Thy Grace has grown!
From East to West with loving power,
Make all the world Thine own.

PHILLIPS BROOKS

AN EASTER FABLE.

BY AUNT QUILLIA.

A seed, an egg, a gray cocoon,
In April's sunlight lay;
Near by, a sleeping child who'd grown
All weary of his play;
Outside the pane a dark old tree
Stood like a ghostly thing,
And over all the old, sweet thrall,
And deathless charm of spring.

A rustle, slight, a whisper low,
On the sunny window-sill,
And the seed began: I am as dead
As the pebble on the hill;
Yet at my heart is a hidden life,
And some day I will rise
A blossom bright, with petals white,
And breath of paradise.

And then the egg: I seem as dead,
And my mottled shell as cold
As pebble, too, and yet, my friends,
A hidden life I hold;
Return me to my woodland home—
My mother's downy nest—
And some fair day I'll sing the lay
Now prisoned in my breast.

The gray cocoon then lightly stirred,
And touching egg and seed,
Replied, I look as dead as you,
More worthless still indeed;
Yet hidden life I still can claim,
For from my tiny tomb
A brilliant thing will spread its wing
And burst the inner gloom.

Last of all the dark old tree:
To him who passes by,
Most lifeless one of all I seem,
Yet hidden life have I.
Tho bare my twigs that trace the air,
And etch the azure screen,
A wonderful, fair miracle
Will clothe them soon in green.

The child awoke and gayly cried,
The strangest thing has happened;
The seed, the egg, the gray cocoon,
The dark old tree that napped,
Have all awaked and whispered, too,
And I have listening been;
So lifeless they and yet they say,
They've hidden life within.

A dream, my child, naught but a dream,
The mother low replies.
And brushing back the bonny hair
Looks in the clear young eyes;
Tomorrow morn is Easter day,
The bells will gladly ring,
The lilies white to prayer invite,
And choirs their anthem sing.

What means it all my wondering boy,
The anthems, lilies, bells?
Each in its way a message brings
And resurrection spells;
Said He who died on Calvary,
And conquered death and sin,
All who believe on me receive
Immortal life within;
Tho claimed by earth they shall come forth,
And endless life begin.

EASTER DAY.

BY RUTH RAYMOND.

The brook's faint ripple. The forest hush,
A pale green bud on each vine and bush,
A bird's low note on the waking air,
A fragrant lily blossoming there,
A band of children softly singing
Till far and near joy bells are ringing,
And over all the Springtime glory
While lips repeat the wondrous story
Of a risen Christ, Death speeds away
In the clear bright dawn of Easter Day.

The Passing of Toad Hollow

By GOLDIE ROBERTSON FUNK

THE school house stood backed four settlers, no one of whom was willing to give any other part of his place for school purposes. In the middle of this draw stood the little weather-beaten building, the ground under and around it never wholly dry, and during the rains a veritable lake of mud that provided a home for countless toads and a chorus of frogs so numerous that persistent depredations of both big and little boys seemed not to diminish either their numbers or the volume of their screeches, the screeches were interpreted by Toad Holler youth as

hoots, since they began the moment school was in session and stopped the instant it closed.

One generation had waded in and out of the school house uncomplainingly—but that was a generation raised by texts they'd learned to read by the light of a tallow candle and to practice daily before grim and God-fearing parents.

The next generation neglected the texts, widened trails into roads and came and went and held in contempt the dirty little school house no one would make a move to better. Their children loitered to and from it and dreamed only of the day when they could quit. To hasten that day and incidentally to provide the excitement their healthy bodies craved, they harried away every teacher who had tried to teach them for so many terms that the middle-aged ones remembered naught to the contrary.

And it was entertaining to the old folks, too. It was the only stirring thing that happened at the Holler. The Heffelfingers hadn't spoken to the Sanderses for nine years for a reason that no one remembered. One election night ten years before, the Waddell boys had fought the Powers boys who were the most peaceful boys in the community. True, the fighters and the fought had both gone, but their parents and the little Waddellses and Powerses remained and nursed a stiff necked grievance.

No three neighbors visited back and forth. Time and never ending work increased the value of their holdings. But as soon as a boy or girl could market his brawn in town he shook the mud of the Holler off his feet and left. And nothing but sickness or death ever brought them back willingly to the bleak home neighborhood they'd hated.

"Bud Heffelfinger an' Bennie Waddell've run away!" News travels quickly even where indifference and hate brood and fatten. Every ranch mother of a ten or eleven-year-old boy searched the round faces of her flock and wondered if that bitter thing could ever befall her. It was hard enough to have them go out when the time came—but to leave thanklessly—to sleep and eat—God knows where.

For the second time in twenty years Sarah Heffelfinger stood on the stoop of the Waddell farmhouse.

Emily Waddell opened the door. But she closed her lips in a thin downward pointing crescent that was lost on her worried neighbor.

"Come in," Sarah Heffelfinger sat down heavily. "What do you know?"

"Nothing."

"Bud never went to bed."

"Neither did Bennie." Silence fell between the two women.

"Joe's gone to town to hunt," Emily volunteered out of a crooked little hole in the corner of her lips.

"I didn't sleep a wink after I knew Bud had gone," Sarah's chin trembled and she wiped her eyes with her apron.

"I—I walked the floor all night." Ben's mother moaned into her hands, the last bit of her reserve giving away.

"There—Em'ly—don't take on so," Bud's mother turned comforter. "I guess their pas'll find 'em. We'll hope, anyway."

"I tried to think what we've done that Bennie wanted to leave. His pa isn't hard on him, an' he hasn't hardly a thing to do."

Sarah Heffelfinger straightened up in her chair.

"I been' thinking that way about Bud, too, an' I've concluded the blame is all mine. Bud's a good boy. He's full o' mischief an' disobedient sometimes—just like I used to be myself. More'n a few chores he hasn't a thing in God's world to do—an' I've decided that's what's the matter. I went to school, an' you did, an' we both helped our folks a right smart bit an' we went to bed early an' got up early, an'—"

"I can't see but what we were con-

(Continued on page 459).



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DETROIT trained men get preference and get jobs quickly. No other city can give what Detroit offers. Think what it means to learn in the Michigan State Auto School. Factories endorse our school, glad to employ our graduates or offer them territory in which to sell cars and start garages. Unlimited opportunities. 71% of Automobiles are made in Detroit. You're right in the Heart of the Auto Industry. Men are needed everywhere as testers, repair men, chauffeurs, garage men, and salesmen. Hundreds of our graduates start in business for themselves.

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We teach you to handle any auto proposition. You graduate in from ten to twelve weeks. Our equipment is new, up-to-the-minute, and complete. No old, obsolete motors, chassis or electrical equipment used. Students actually build cars from start to finish, getting factory training in assembling, block-testing, road-testing, everything. Special complete course in Oxy-Acetylene brazing, welding and cutting separate from regular course. Learn to time motors, rebore cylinders, adjust carburetors, magnetos, valves and bearings quickly and accurately. Six-cylinder Lozier, Chalmers "6," Detroit "6," Overland, and 8-cylinder King are used for road instruction. We have a new Chalmers "6-30" chassis with 3400-r. p. m. motor, the latest thing out. Also Willys-Knight 1917 chassis, Studebaker "6" 1917 chassis, Hudson Super-Six 1917 chassis, Cole "8" 1917 chassis, Detroit Electric 1917 chassis, Saxon "6" 1917 chassis, Maxwell 1917 chassis, Oldsmobile "8" 1917 chassis, Briscoe 1917 chassis, Winton "6" chassis, G. M. C. Truck. All completely equipped for students to work on. We have more than 20 motors in our block test department—2 cyl., 4 cyl., 6 cyl., 8 cyl., and 12 cyl. Our electrical department is complete, having every standard starting, lighting, and ignition system, including Delco System as used in Buick, Hudson, and Packard Twin "6."

Detroit Is the Place to Learn—Start Any Time

There are 44 auto factories in Detroit and vicinity and 140 accessory and parts factories. Our students have the privilege of going through any or all of them. We now operate Westinghouse, Auto-Lite and Bijur Service Stations. This has added thousands of dollars' worth of equipment and makes our electrical department unequalled. Students get actual experience in handling all kinds of electrical auto equipment and taking care of trouble. We have just installed a Sprague Electric Dynamometer for block-testing purposes for students' use. Ours is the only Auto school having this equipment. Auto factories need Dynamometer men constantly. Factories and Garages are paying big salaries to men who know how to handle electrical equipment quickly and properly. Detroit is the automobile center. You get practical instruction. School open all the year. Enter classes any time, any day. Three classes daily: morning, afternoon, evening. All instructors are members of the Society of Automobile Engineers (S. A. E.). There is a great demand for Michigan State Auto School students. Auto factories write and phone for men constantly.

Follow the Crowd to the Michigan State Auto School. Come to Detroit.

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We guarantee to qualify you in a short time for a position as chauffeur, repair man, tester, demonstrator, garage man, or automobile dealer, paying from \$75 to \$300 monthly or refund your money. We have constantly more requests for Michigan State Auto School Graduates than we can supply.

Additional Building and Equipment Thousands of dollars' worth of new equipment, plenty of room for students to work at 687-89-91 Woodward Ave., in addition to our building at 11-19 Selden Ave. Our school has grown by leaps and bounds, students come from all over the world. We are constantly adding new equipment. Our electrical department is thorough and complete.

Factory Co-Operation We have completed arrangements with the Auto factories to put them in touch with men who intend going into business for themselves. Men who know the auto business from A to Z are in biggest demand. Remember, the price of course is based on giving full value. Graduates in the complete auto course are competent to handle farm tractors.

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ACT QUICKLY—NOW!

Fill in the coupon; get full particulars, "Auto School News" and New Catalog. All absolutely free. Or better still, jump on the train, as hundreds have done, and come to the "Heart of the Automobile Industry," and learn right. We have no branches. Write or come direct to this school.

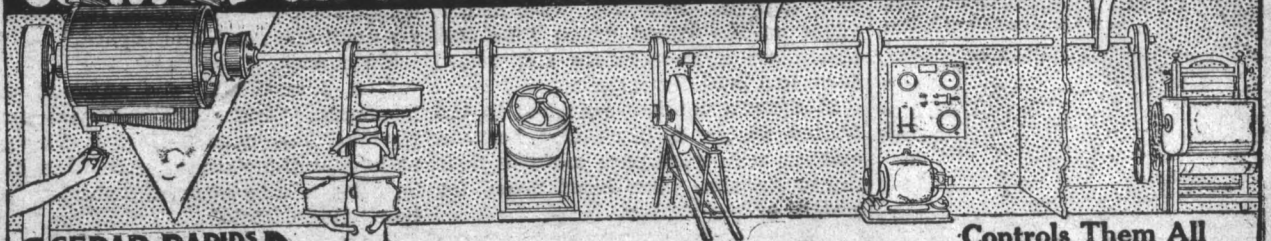
MICHIGAN STATE AUTO SCHOOL

The Old Reliable School A. C. ZELLER, President
1004 Auto Building, 687-89-91 Woodward Ave., 11-19 Selden Ave.
DETROIT, MICHIGAN, U. S. A.

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—as low as \$12.00—

—the speed governor of a thousand different speeds. Every turn of the hand wheel gives a different speed and each speed is absolutely steady and uniform.

Install it yourself with a screw driver. No figuring pulleys, no chance of installing it wrong for it runs in either direction, attached to the floor, the wall or the ceiling. It's as cheap as an ordinary line-shaft with the governor pulley thrown in.

Go to Your Dealer

and see it. He'll demonstrate it and he'll show you what a profit-producer it will be for you. Get all the facts. They are worth knowing.

THE Cedar Rapids Speed Governing Line Shaft is as cheap as the average friction-clutch pulley, yet it controls the speed of several pulleys at once without stopping your engine. The engine operates the governor—the governor controls the line-shaft.

The governor absorbs all jerky vibration. The power transmitted is steady and smooth. Runs all machinery at uniform speed. If you own an engine you need the Cedar Rapids Speed Governing Line-Shaft. One man saved enough labor fanning 50 bushels of clover-seed to more than pay for his governor outfit.

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Controls Them All

Cream Separators require starting at slow speed. The Speed Governing Line Shaft makes any separator run smoothly.

Butter Churning necessitates slowing down the machinery to gather the butter. It regulates this.

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\$50 in Cash Prizes

to be awarded July 1st. Present owners and prospective buyers should write for full particulars.



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No need now to waste time soaking your feet so often. Nor run the risk of paring.

BLUE-JAY plasters have ended millions of corns. This very night thousands of people will say goodbye to painful corns forever. Touchy corns are needless, even foolish.

Blue-Jay brings instant relief. And in 48 hours the average corn is gone. Only a few stubborn ones require a second or third treatment.

A Blue-jay plaster, with its healing wax, is applied in a jiffy. No soreness, no inconvenience. The pain is not temporarily eased, as with paring. There is no danger, as with harsh liquids. Decide to join the happy crowd tonight which has won freedom the Blue-jay way.

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Clear Land the Easy Way—
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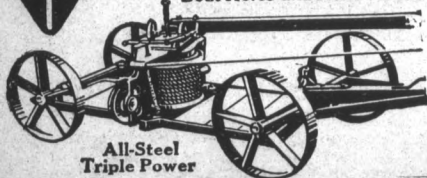
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Mention the Michigan Farmer when writing Advertisers

"Mister 44"

By
E. J. RATH

She was extravagantly proud of him. It seemed to her that nothing he set his will upon could stand before him. Even when he spent long hours over strange columns and combinations of figures that she did not understand she still knew he was fighting, planning, counting the victory.

Then Sadie had found herself doing things. Stoddard's spirit of conquest reigned in her own soul. She was fighting, too—fighting against the bondage that held her mind and speech in check. And she gloried in it, because she knew that she, like her wonderful husband, was gaining a victory.

She had become a slave to her books. She drove herself relentlessly. Sometimes he tried to check her impetuosity, but she would endure no restraint. She wanted to learn—learn—learn! She had a new vision before her. It pictured a time when she would be standing by his side, helping to fight his battles.

It was a far day, she knew, but that made her the more resolute to achieve it. She did not tell him this, but it was always in her heart and mind, spurring her.

"I'll be helping him some day," she would whisper to herself. "I'll be even more than his wife; I'll be his right hand man."

They had gone to the far land two days after their marriage. His mother knew only after they were on the sea that she had a daughter-in-law. For several months afterward all else that she knew had come from Larry Livingston. At first she did not believe. Then, when she realized that Livingston spoke the truth, her heart was filled with bitterness, resentment and even horror. She felt that she could never see her son again; that he had passed out of her life in disgrace and shame.

Then his letters had begun to come—brave, joyous letters from a wilderness. Slowly it dawned upon her that her son was happy. That comforted her. More and more he wrote to her about his wonderful wife. She could not and would not believe, yet she was glad that her son believed. He was back in her heart again, for the mother in her would not be denied.

But as for the woman, she was a thing apart. There could be no change there. The mother-love was not broad enough to cover both; the mother-jealousy still burned, a persistent flame.

Mrs. Stoddard was abroad when her son and his wife returned from South America. They had not lingered in New York, but made swiftly for the Deepwater, where they always lived in their dreams. Now they were lodged again on the island where Fate had cast them a year before and where Love had built its camp-fire.

Stoddard's mother returned to the United States to learn that her son and his wife were once more in their forest Arcadia. Her heart ached for a sight of her big boy.

Yet she hesitated. The other woman was there, standing between them. It was a letter, penned from the heart of the great outdoors, that decided her. The letter was from her son's wife.

This time Stoddard had word of his mother's coming. Sadie was apprehensive yet eager. She knew it would be hard to forgive, for she herself had the heart of a woman.

"But perhaps she'll see—and understand," she told herself. "Maybe she'll love me just because I love him, or because he loves me. Oh, if I can only make her know what I'm trying to be—what I will be."

The launch would be coming from the hotel soon. Sadie had quietly pre-

pared herself for the ordeal. In her heart was a prayer that her husband would be proud of her, even when she stood side by side with the grand lady she had once furtively looked upon from a hiding place in the woods.

"I think I'll read another chapter while we're waiting," she said, turning to her husband. "Where did you put my history, Jack?"

"I think it's in the tent. Can't you rest a little, dear?"

"No," she answered, shaking her head gently. "I mustn't rest. I don't want to rest. I want to keep going—on and on. And I'm never tired. That's why I love it."

He fetched the book. Sadie found her chapter. She settled herself comfortably against a tree and read a page. Then a quizzical look came into her eyes.

"Jack!" she said.

"Yes?"

"Why couldn't the colonists have went somewhere else beside England to buy their tea?"

"They were given no choice," he answered. "England enforced a monopoly."

Sadie closed her book and looked at him severely.

"That's the second time I've caught you today," she chided, shaking her finger at him. "I didn't tell you the first. I wanted to see if you'd do it again. And you did!"

"What?"

"Broke the rule."

"Did I?" he inquired innocently.

"You know very well you did. That was only a trick question I asked you. Didn't you hear me say, 'Have went?' You know you did, Jack. But you never corrected me."

"I don't think I noticed," he pleaded.

"But you must notice!" she declared.

"It's the agreement. You mustn't ever let me say things like that. Every time I do you're to tell me. That's twice you've let me off today. How am I ever going to get on if you don't keep watching me?"

"But you're getting on so wonderfully!" he protested. "It seems like nagging to tell you of every little slip."

"It's not nagging," said Sadie stoutly. "It's part of the game. And you agreed to play it, so I'm not going to let you off. Why, if it hadn't been for that I'd never have learned to put on my g's. Even now I forget, sometimes."

"But you're so terribly strict with yourself," Stoddard sighed. "I don't care if you do drop a 'g' once in a while."

"But I care. I have to be strict with myself. Who would be, if I weren't? Not you, you dear old easygoer. I could speak factory English the rest of my days, and you'd be satisfied."

He nodded.

"But I wouldn't," she affirmed vehemently. "And that's why you simply must keep at me—always. I mean as long as there's need of it. And the harder you keep at me the shorter the time will be, Jack."

Stoddard surveyed his wife with fond eyes.

"Let's not read history now," he said, taking the book from her. "School's out for the day. Let's talk."

They were soon again on the subject of his mother's visit and Sadie's fears.

"You mustn't think that mother is severe," he was saying. "She's not really that way. But, you see, she has been used to one sort of life and it's not easy for her to accept anything else."

"She's strict about what is proper and what isn't, I suppose," mused Sadie. "That's one thing that worries me—what she thinks about the way we met."

"I never told her that, dear. There was no use. She doesn't know about the letter and the shirt."

"Yes, she does," said Sadie quietly. "I told her in the letter I wrote."

Stoddard looked at his wife in surprise.

"It was best," she went on, nodding. "You're her son, and she had a right to know all about me. So I told her."

"You'd been sending her those beautiful letters about me, but they weren't about the real me at all. I couldn't be all the things you said I was; not yet, at any rate."

"When I wrote there wasn't any praise in it—except about you. She mustn't ever tell you what I wrote about you; there'll be no living with you if she does."

"I told her who I was and what I was and how I met you. I didn't leave out any of that part. And I told her what I was trying to do. I had it all spelled right, I'm sure, because I went over all the hard words with the dictionary. That's why I'm wondering what she's going to think of me."

He sat silently for a moment; then reached for his wife's hand.

"You did right," he said. "I think God gave you the cleanest courage ever put into the soul of a woman."

A little later, as they sat talking in low voices, the sound of a motor boat rounding into Pickerel Bay from the South Arm reached their island. Sadie fell into a constrained silence as the craft drew nearer. When Stoddard walked down to the rocks to meet it she arose, went over to the tent and aimlessly busied herself there.

Mrs. Stoddard was lifted ashore in the arms of her son and stood clinging to him in a long embrace.

"Just the same boy," she said softly as she searched his face with anxious eyes. "My boy, John."

He smiled down at her and patted her shoulder. Then she drew away from him and glanced about her.

"Where is my daughter?" she asked.

The quietly spoken words thrilled Stoddard. What a mother she was! He turned and leaped up the embankment, running across the clearing to where Sadie stood.

"Come!" he said, taking her by the hand. "She has asked for her daughter."

Sadie, a light of wonderment in her eyes, followed him.

The two women faced each other for an instant in silence. The glance of the elder was swift and keen, yet there was a smiling tenderness in her eyes. Then she put forth her arms.

"Come, daughter," she said.

Stoddard turned his back and went off a little distance, trying to swallow a lump in his throat. When he turned again he saw two women in each other's arms, the golden-bronze head of Sadie hidden against his mother's shoulder, while her figure trembled with joyous sobs.

He went far down the island, his heart filled with a great happiness. It was more than an hour before he returned, to find them sitting together by the tent, one of Sadie's hands clasped between his mother's. Mrs. Stoddard looked up at him and smiled.

"When can I coax you two away from your woods?" she said. "My heart is hungry and selfish. I want my son and daughter under my own roof."

It was just before the launch carried Mrs. Stoddard back to the hotel on Deepwater Island that she whispered to him:

"I came to make a sacrifice, but there is none to be made. She is more than you said. I love her. Bring her to me soon." SB? EHE ETAOINULD to me soon."

They watched the launch until it had passed from sight beyond a headland. Then Stoddard's glance swept slowly over the warm tints of the September landscape, and he sighed.

"I suppose we will have to go pretty soon," he said. "She wants you. Yet

I don't see how I'm going to share you."

"We can come back again, boy."

"Why, we'll come back in the spring," he said. "I never thought of it before! We'll stay a whole season."

THE END.

THE PASSING OF TOAD HOLLOW.

(Continued from page 457).
tented enough," Emily fell in behind her stronger neighbor.

"Yes, we were, an' it was havin' every minute full that kept us so. I don't mean with just work—but you an' me played—I mean we played together. I don't know what's the reason our neighborhood is like it is. Even the children can't play together only on the sly!"

"It's awful!" Emily Waddell exploded. "I just hate it sometimes. If we didn't own the place I'd leave it and move to some other neighborhood!"

"Em'ly, I want to say something—but you might get mad, an' I wouldn't mean to make you mad."

Thus reassured Emily promised not to get mad.

"It's this—I've hated the neighborhood, too, and wish I could run away. But I'd take myself along. If I moved into another bad neighborhood I wouldn't be bringing it anything to better it. If I moved into a good neighborhood I don't know as I'd be any credit to it. Anyway, Em'ly, after last night my eyes are open. Bud an' Bennin ran away for the same reason that you an' me would 've, gladly, time an' again. How can young things stand it, then—no school, no fun, no companions, no way to work off their spirits, an' nothin'—nothin' to aim at? I've got to the heart of it, I know, but it took this turrible thing to br-bring me to my senses." Both women cried softly again.

"There!" Sarah Heffelfinger jerked her apron away from her face. "That's the last tear I shed. I'm goin' to work to do something to make this neighborhood fit for us an' our children to live in. Why, I don't hate you, Em—an' next to my own kids I c'd love your Bennie—"

"An' I never hated you," Emily laughed through the last of her tears. "I've started to see you a hundred times but something always held me back—an' I've nearly died of lonesomeness."

Sad lines came into the older woman's face. "It's all my own fault. I'm older than you—something about me must've kept you away. I must be that way with Bud or he wouldn't want to slip away from me when he's not much more'n a baby. But you an' me must begin all over again, Em'ly. We're just women, an' our neighbors are just women, an' if we get lonesome they do—an' if we won't have kind feelin's an' do a little somethin' to keep good feelin' alive in the neighborhood they won't. An' it's worse for the young ones."

"I do wish school would keep," Emily complained.

"It must. It will when us women an' our men folks get together an' back the teacher up. We've never done that yet. There ain't no slip of a girl can come out here an' do much for our kids unless her an' the kids both know we're behind her. If I couldn't teach Bud to honor his father an' me she can't—an' I'll admit I've got so interested to see which'd beat, the teacher or the kids, that I've never taught Bud he had a share in keepin' school. Oh, I thought it all out in the dark last night when I couldn't sleep for thinkin' of where little Bud might be a sleepin'! An' I didn't conclude we could work any wonders either. I'll be content if I can back track an' pick up the stitches I've dropped."

"I do anything," Emily spoke with the pent vehemence of years that had dragged dull and pointless over her spirit. (Continued on page 469).

A Letter To You

While the following letter was addressed to us, there is a message in it for every woman interested in economy and good cooking, so we address it to you through the newspaper.

"I must write and tell you of my experience with economical Lily White Flour. I say economical because I have found it so in this way.

"I received a sack of Lily White, sent me in error by my grocer, and when using it in a recipe that I had always used with other flours I found my dough too stiff. I used the same quantity as usual, so next time I used less and have been delighted with the results ever since.

"In these days of the high cost of living I think it would be well for all housewives to know that Lily White Flour goes farther and makes more than any other flour I ever used."

(Signed) MRS. L. B. ROBBIN,
751 College Ave., Grand Rapids, Mich.

Mrs. Robbin is a new convert to Lily White Flour and her testimony is very significant in view of the fact that heretofore she has used two kinds of flour—a so-called bread flour for bread, and a pastry flour for pastry—and has found Lily White better for all purposes than the special flours were for special purposes.

Every sack of

Lily White

"The Flour the Best Cooks Use"

is sold on the guarantee your money will be returned if you do not like it as well or better for both bread and pastry baking than any flour you ever used.

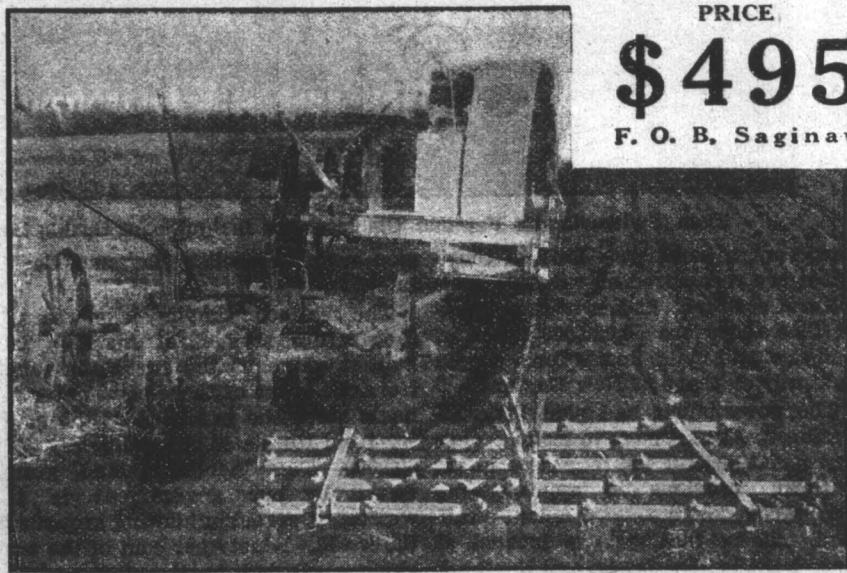
Packed in 5 lb., 10 lb., 24½ lb., 49 lb. and 98 lb. sacks.

VALLEY CITY MILLING CO.

Grand Rapids, Mich.

MICHIGAN SPECIAL No. 2, 8-16 BULL TRACTOR

Specially Built for
Michigan Farms



PRICE
\$495

F. O. B. Saginaw

These Brand-New No. 2 "Bulls" are the product of three years of the most trying work on hundreds of farms and under every sort of soil condition. One man plows six acres a day; all power work on farm fades away before the "Bull". A fiend at the belt. First allotment now at Saginaw ready for immediate delivery. Repairs in stock here.

Roeser Bull Tractor Company, Saginaw, Mich.

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KRAUS PIVOT AXLE CULTIVATOR

**3¢
PER
ACRE**

The KRAUS cultivator costs only 1½ to 3¢ per acre as compared with 9¢ on the average cultivator, according to government figures. These figures show the economy of buying the KRAUS PIVOT-AXLE CULTIVATOR. A touch of the foot lever moves the shovels and wheels side-wise, simultaneously. Cultivates hill-sides, uneven land and crooked rows as easily as level ground. Ratchet gauge secures even depth of cultivation.



Write for Free Booklet which also describes the Akron Fertilizer Distributor which applies fertilizer while cultivating.

THE AKRON CULTIVATOR CO.
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Everywhere to ride and exhibit the new "Ranger" motor-bike completely equipped with electric light and horn, carrier, stand, tool tank, coaster-brake, mud guards and anti-skid tires. Choice of 44 other styles, colors and sizes in the famous "Ranger" line of bicycles.

DELIVERED FREE on approval and 30 DAYS TRIAL. Send for big free catalog and particulars of our Factory-direct-to-Rider marvelous offers and terms.

SEND NO MONEY but tell us exactly what you need. Do not buy until you get our prices, terms and the big FREE catalog. Write Today.

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Dept. N-77 CHICAGO

AGENTS WANTED

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

THE MICHIGAN FARMER, Detroit.

Agriculture Prominent In List of Alaska's Great Resources

By EARL W. GAGE

WHILE the warring nations of Europe are writing a terrible history of destruction, our new-discovered Alaska is passing through its infant period of construction. Few people could say why the United States sought this thought-to-be bleak, cold and waste area, paying \$7,500,000 for a new spot on the world's map one-fifth the size of our country. The empire slept in supreme secrecy for a score of years, when man entered its portal gates with determination, and many an individual returned to civilization with more gold to his credit than the price paid for the addition.

It is a startling revelation, this "Seward's Folly" which has produced \$540,-

fathers did in the west in '94, facing a nameless unexplored wilderness bearing an even more terrorizing reputation than the new treasure land. Business interests are alert to the stupendous possibilities, while capital is busy planning for the campaign.

Three men have liberated and acclaimed Alaska. The President surprised Congress and the American people by his progressive Alaskan policy, in which he termed this empire "the storehouse of the nation," and urged the unlocking of the storehouse by means of government railroads, and various other forward movements. Next in order is the secretary of the interior who suggested wise movements for development. The Alaskan representative in Congress must be given credit for numerous beneficent bills, the securing of better mining and fishing laws and civil rights for which Alaskans have been so long contending. Although gold spurted from Alaskan hills back in 1898, the years of 1914-16 will stand out as the period in which Alaska was unlocked to the developing hand of man.

When one speaks of agriculture in Alaska many are taken with a humorous spell. Yet Alaska has already demonstrated that it is capable of producing in abundance all that can be raised in the Scandinavian countries, the hardy cereals, the meats, the berries and vegetables, upon which 9,000,000 people are presently living in luxury in Norway, Finland and Sweden. The fact that southeastern Alaska possesses a climate more equable than that found in our National Capital city is doubted by those who have not visited the country. Nevertheless, the fact remains—it is more temperate. The northern sections possess a far more desirable climate than St. Petersburg or Stockholm, both famed as tourist centers. Alaska, save in extreme northern sections, has few winters that will exceed those of northern Maine and

Department of Agriculture, there are more than 10,000 square miles of area in the country today, adapted to grazing and farming, a larger part in the interior, in the great Yukon valley region.

Alaska's population of 64,000 souls, less than 40,000 of whom are whites, purchase some half million dollars worth of foreign imports, and domestic goods to the value of \$23,000,000. In return, they send us nearly \$40,000,000 worth of minerals and fishery products. Alaskan waters abound in fish and this industry is a great one. During the year 1915, \$14,500,000 worth of salmon were caught and canned, as well as \$500,000 worth of halibut, \$360,000 worth of cod, \$135,000 worth of herring and \$160,000 worth of whale oil and fertilizer was produced. Ninety whales were caught. Fish forms one of the principal foods of the native population.

The geological survey in its recent report says that it would be safe to estimate the coal deposits of Alaska as 150,000,000 tons, further advising that the real figures would give many times this total deposit. This estimate would provide for an output of 10,000 tons per day for more than 40,000 years. There would seem to be no need of fearing a coal famine so long as our country holds the royal throne of Alaskan coal deposits.

Tin is one of the mineral deposits which the United States lacks. There are untold deposits of this valuable product in Alaskan mountains. Although but \$5,000 worth of this mineral was accounted for in 1909, today the annual product of the tin mines amounting to approximately \$150,000, although the earth has merely been scratched in this direction. Gypsum is another valuable resource, bearing \$135,000 worth of industrial raw products. The oil fields give promise of becoming very wealthy assets. Petroleum is particularly found in the re-

our country with fully \$2,000,000 per year, according to scientific calculation.

Alaska has often been pictured as a polar region. Polar climatic conditions prevail only in the extreme northern third of the territory, while the climate of the Pacific coast is temperate, the inland region having an especially healthful and invigorating atmosphere. Only on the seaward slope of the coastal mountains is the snowfall heavy enough to impede railroad traffic. Hardy cattle and sheep thrive in many sections of the country, but the reindeer may be cited as an example of what otherwise worthless land may produce. In 1892 the government imported a small herd of these hardy animals from Siberia. Today, under the wise management of the Bureau of Education, the herds have increased to 50,000, and Dr. H. A. Brooks declares that there are tens of millions of acres of tundra in Northern Alaska where these animals thrive as pigs in clover. Alaska may yet supply the United States with frozen reindeer meat as Australia does England with shipments of frozen rabbit, especially since venison is far superior to rabbit meat. Reindeer have made the Eskimos a thrifty people, and the present schools of Alaska are constructed about the great reindeer industry, having led the natives under civilized conditions. Inasmuch as three men can care for 1000 reindeer, it is easy to appreciate just what this industry may be made, in due time, both as a profit to the Eskimo and the American people.

Our Alaska has slumbered and slept, the rest has done her good. In a time when our commercial leaders are anxious as to the future supply of valuable raw materials with which to carry on American industry, this infant of the northland comes with willing heart to our aid. Now looms a great future in which isolation shall have no place, where the throb of industry shall vibrate in a million places that



Thrifty Oats Grown on School Farm at Klukwan, Alaska.

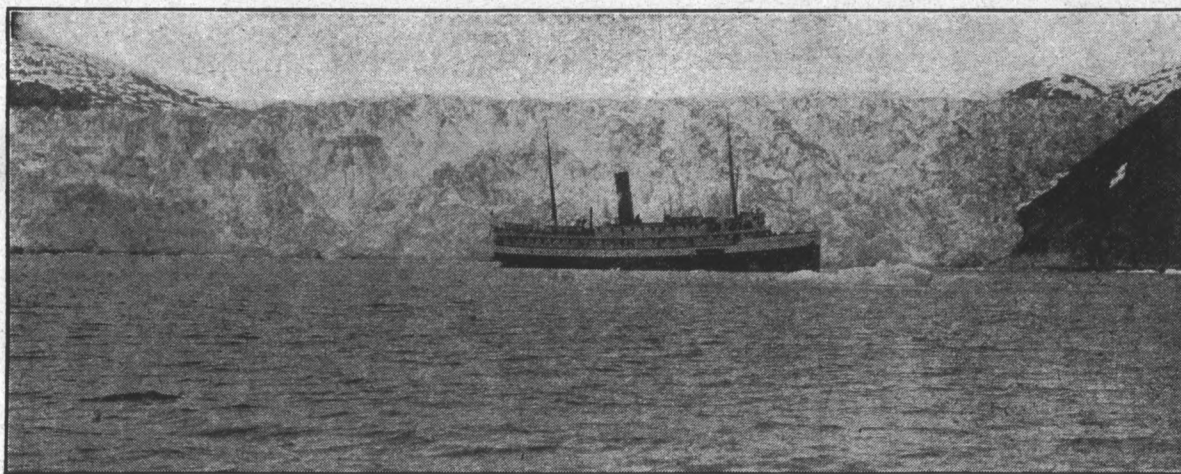
000,000, or seventy-five times the purchase price, by the end of 1914. This represents more than \$15,000 for each white man, woman and child inhabiting Alaska. Until the government voted to construct the railroad, we thought most of us, that Alaska was a land of silent, frozen golden sands and sudden fortunes. The fact is, Alaska's real resources have never been reached, and the vigorously derided land is destined to support a nation five times its size, with additional products for export.

And so we find that the poet's words of old:

"A land of allurements and promise,
Bold venture and strenuous deed."
amply described this last undeveloped free empire, which is equal in proportion and wonders. The area is equal to the original thirteen colonies, with Maine, Vermont, Ohio, Indiana, Tennessee, Kentucky and Michigan added; has a range of latitude of one thousand one hundred miles, while its extreme longitude would reach from the Atlantic to the Pacific.

Stupendous mountain heights reach three and four miles into the sky, loftier than any in the country. The Yukon river is 2,300 miles in length and its nearest rival a thousand miles. The greatest glaciers in North America are here, which cause those of continental Europe to look like pygmies, while volcanoes still alive may be viewed from a safe point. The country is not cold and bleak like Labrador, although its latitude is similar. The Japan current acts as does the Gulf Stream in England, so that plant and animal life flourish with about 100,000 square miles of land available for intensive agriculture.

The last pioneering enterprise of the United States is at hand. A new land of opportunity for thousands of Americans, for thousands upon thousands from other lands who have the will and the courage to do what our fore-



Even Switzerland's Famous Glaciers Are Insignificant Beside those to be Found in Alaska.

New York in coldness. Both of these states are recognized as valuable agricultural sections. It has been estimated that there are 50,000,000 acres of land that will make homes for a people as sturdy as those of New England.

The government had paid little attention to Alaska, save to make proper appropriations for the four experiment stations, previous to appropriating \$35,000,000 for the government railroad. These stations are located at Kodiak, Sitka, Fairbanks and Rampart. At the latter stations, situated near the Arctic circle, there is practically no night from May 15 to August 1. This supplies five months equal to middle west conditions, allowing the successful production of principal grain crops, such as oats, barley, wheat, with potatoes the most paying crop. The average net proceeds from one acre of Alaskan potatoes is about \$600, while strawberries grow successfully in nearly every community. According to the

region near Controller Bay and Cook's Inlet.

The seal coat that my-lady wears is the feature product of Alaska. The market value of the fur skins taken from the backs of these semi-water animals since the purchase of the country from Russia is approximately \$70,000,000. The Pribilof Island group, owned by our government is the wealthiest seal-skin hunting grounds in the world. Ninety per cent of the seal-skins marketed in the cities of the world come from the Pribilof group, consisting of four islands in the Behring Sea. These were not discovered until 1786, by a Russian explorer. Here is found the chief rookery and breeding grounds of this strange animal. The seal industry not only supplies a profitable occupation for the native populace, but will improve in years to come, under conservative scientific governmental management, a national asset that will supply the treasury of

have been silent since time began, where the teeming population shall wrest untold riches from the earth's bosom, and where shall be bred a race of hardy, sturdy sons of America.

THE EASTER GIFT.

BY CORA A. MATSON DOLSON.

Last year above a little grave
I knelt and prayed to Him who gave:
"Grant, Lord, that through my tears I
see
Thy bow of promise gleam to me."
Tomorrow, when the Easter wakes,
And dawn above the churchyard
breaks,
With lily flowers of rare perfume
These hands will wreath that self-
same tomb.
But little feet by mine will walk;
My ears will hark to childish talk;
And in my prayer my heart will bless
The Giver of home-happiness.
For this, Thy bow of promise, shone,
Gave me this trust to be mine own—
These words that gleamed from out
heaven's blue:
"My poor ye always have with you."

Woman and Her Needs

At Home and Elsewhere

Where Pride Is Desirable

IF I had to be a washwoman I'd make a desperate effort to be the best one in town," sputtered a woman who had never done a day's work in her life. She was viewing with wrath and indignation the laundry for which she had just paid three dollars, and which looked as though it had been washed in a mud puddle and ironed with cold irons. "I can't understand how people can send back such work. I'd be ashamed to admit that I couldn't do better. You'd think honest, human pride would make anybody in any walk of life want to beat everyone else in their profession, now wouldn't you?"

By one of those strokes of fate, or dispensations of Providence, whichever you wish to call it, the little lady had a chance to make good on her philosophy. Within a month husband and money were both gone, and she had to go out to make her living. And I am happy to say she lived up to her own preaching. It was not washing she chose, she hadn't the muscle for that, but as a saleswoman in a department store she went to work to be the best one in her line. The "honest, human pride" she referred to stood her in good stead. She was as proud of her record as a clerk as she had been formerly to be called a society leader, and a year's time saw her the head of her department. She gave her best to whatever she had to do, that was her rule of life, and a simple one. But it is one which makes for success, whatever we are called upon to do.

Probably if eighty out of every one hundred women asked told the truth they would say they hate housework. And the real reason in the majority of cases would be because they are ashamed of their work. For some reason the modern woman seems to think housework is beneath her and she was really intended for "finer things." That is the real reason for the universal dislike for housework, and the notoriously poor housekeeping perpetrated in so many homes.

Instead of deciding, when she marries, to be the best housekeeper in her neighborhood the modern girl marries with the secret intention of doing as little housework as possible and in the quickest possible time. She thinks her old-fashioned grandmother who ran a race every Monday to get her washing out before the neighbors was a fool. On the contrary, the lady of a former generation was the wise one. She had an incentive in her work, the incentive of beating her neighbor, which is a very laudable one whether you are doing a washing or playing a game of cards to win a plate worth about ten cents.

If the modern girl would adopt a few of grandmother's ideas it would revolutionize American housekeeping. If she could realize that the hand that cooks the dinner is the hand that rules the destinies of the home and nation she might think better of her job. For the mind is very much affected by the body, and the body depends for its health and energy upon the fuel, i. e., the food, it is given. Hence it behooves the housewife to feed herself and family right. So that cooking and serving is after all the most important thing in life, and after that comes sanitation and cleanliness, which is next to godliness.

No one can go out to work and do

his best if he is illly nourished. So the success of the worker is entirely dependent upon the success of the housekeeper. If girls were only taught to look at housework in this light, as the most important of vocations instead of something to be shunned and shirked, life would be happier for thousands of families.

You know the old tale, "for want of a nail, the battle was lost." I've always thought that if the worthy soldier had had a decent breakfast that morning he wouldn't have forgotten so important a thing as shoeing his horse just before a battle. So the cook was to blame, and it should be "For want of a good cup of coffee the battle was lost," instead of that old horseshoe nail.

Take pride in your work whatever it is. If you are washing dishes see to it that no one finds anything but absolutely clean, shiny bone-dry ware when you are through; if you wash, let your clothes be snowy; if you iron, leave no wrinkles; if you dust, remember the chair had legs as well as a back, and if you sweep, don't forget the room has corners. If you go at housework in this way you will soon find it a thing to be proud of, instead of something to approach each morning with a groan and a sigh.

DEBORAH.

THE POPULAR BANANA.

BY JULIA R. DAVIS.

The banana is, unquestionably, one of the most popular fruits on the market today. Indeed it is said that if all the bananas that are shipped into the United States in one year were placed end to end it would make a line which would encircle the globe more than a dozen times. This is remarkable when we consider the fact that up to fifty years ago very few Americans had ever seen a bunch of bananas. This fruit was a curiosity, and almost unknown in the markets of this country.

India is the original home of the banana, but at present it is cultivated in almost every tropical country and in the semi-tropical parts of the United States. As the banana is seedless, the propagation is effected solely by sprouts, suckers, and by means of root cuttings.

Cutting the stalks to secure the bunches ends the life of the plants, for they bear but once. However, when a stalk has been cut, one or more new suckers soon take its place. Thus a continuous harvest is assured many years before the old orchard requires replanting.

Bananas grow to a height of from fifteen to thirty-five feet, and greatly resemble palms, although their trunks have not the solidity of the palm trunk. They are only hollow stalks around which a compact roll of leaves continually push upward. The leaves are immense oblongs in shape, each bearing a well-defined mid-rib and spreading out like huge palms.

It is claimed that a grove of grown plants of bananas will produce more food-value per acre than any other known crop. This nutritious fruit is rich in starch, sugar, and nitrogenous matter. Indeed, it forms the principal article of food for millions of people in hot countries, and by analysis has been declared one of the very best food diets when it is eaten in its native

country. For export the banana must be gathered green, and is allowed to turn yellow and ripen in a dark, cool place. After once coming into full bearing the bunches can be cut from an orchard every week throughout the year. It is estimated that a plantation of seventy acres of bananas will, after the first year, produce upwards of 50,000 bunches annually.

In the countries where they are grown the natives cook and serve the banana in many ways. They bake them, boil them, fry them in oil, and make cakes from banana meal. The following recipes will show many ways of serving this universally popular fruit.

Baked Bananas.—Arrange bananas in a shallow pan, cover and bake until skins become very dark in color. Remove from skins and serve hot, sprinkled with sugar.

Sauted Bananas.—Remove the skins from bananas, cut in halves lengthwise and again cut in halves crosswise. Dredge with flour and saute in clarified butter. Drain and sprinkle with powdered sugar.

Banana Fritters.—Three bananas, one cup of bread flour, two teaspoons baking powder, one tablespoon of powdered sugar, one-quarter teaspoon of salt, one-quarter cup of milk, one egg, one tablespoon lemon juice. Mix and sift dry ingredients. Beat egg until light, add milk and combine mixtures. Then add lemon juice, and banana fruit forced through a sieve. Drop by spoonfuls, fry in deep fat and drain. Serve with lemon sauce, or sprinkle with powdered sugar.

Banana Salad.—Remove one section of skin from each of four bananas. Take out fruit, scrape and cut fruit from one banana in thin slices, fruit from other three bananas in one-half inch cubes. Marinate cubes with French dressing, add two spoonfuls of nut meats. Refill skins, and garnish each with the slices of banana. Stack around a mound of lettuce leaves.

Banana Salad. No. 2.—Cut fine bananas in slices lengthwise, as thick as a dollar, and arrange them on a dish so that the ends of the long semi-circle slices meet and form a hollow center. Pour over them one gill of sherry made very sweet with sugar, into which you have put one teaspoonful of lemon juice. Let this get ice cold, then fill center with whipped cream piled high. This is delicious.

Banana Cream.—After peeling the bananas mash them thoroughly. Allow equal quantities of bananas and sweet cream and to one quart of the mixture allow one-quarter of a pound of sugar. Beat together until the cream is very light.

Banana Cantaloupe.—Half box gelatine or two tablespoons of granulated gelatine, half cup of cold water, whites of two eggs, one-quarter cup powdered sugar, three-fourths cup scalded cream, two-thirds cup of sugar, four bananas, mashed pulp, one tablespoon of lemon juice, whip from three and a half cups of cream, twelve lady fingers. Soak the gelatine in cold water, beat the whites of eggs slightly, add powdered sugar, and gradually hot cream, cook over hot water until it thickens; add soaked gelatine and remaining sugar, strain into a pan set in ice water, add bananas and lemon juice, stir until it begins to thicken, then fold in whip from cream. Line a melon mold with lady fingers trimmed to just fit sections of mold, turn in the mixture, spread evenly and chill.



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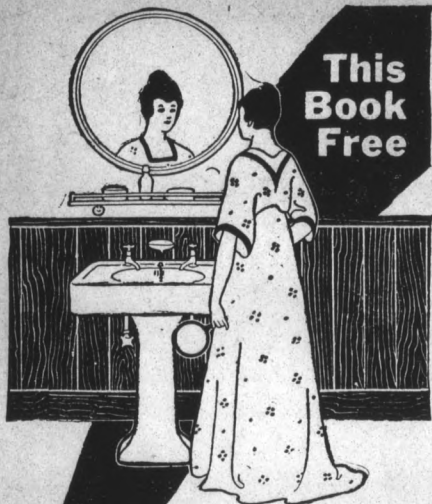
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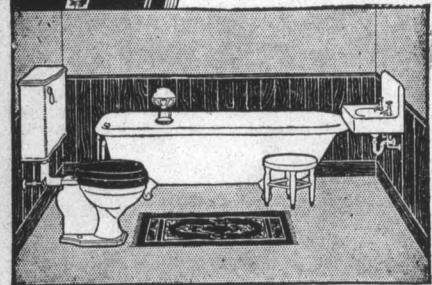
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Marrying a Farmer

By HILDA RICHMOND

BUT you knew you were marrying a farmer, didn't you?" asked the blunt old aunt when the young wife wept and told her that the young husband was inconsiderate because he would not take her to town. "You knew he was planning to make farming his life work and that he knew nothing else to do. I think you are very inconsiderate yourself, Julia. You would ruin your husband's business prospects for a childish wish to move to town. If you hated the country, as you say, why didn't you remain single and take a position in town?"

But no, the unreasonable young woman wanted to be married and she wanted her husband to move to town with her. "He is too smart to bury his talents in the country," she sobbed. "If he cared anything for my happiness he would leave this horrid farm at once." Further questioning on the part of the aunt brought out the fact that she had deliberately planned before she married that young farmer to make life miserable for him until he should take her to town. She did not

will surely bring trouble. You may win out and take an unwilling farmer to town, but you'll have to pay the price later on, as so many women have done. It is very hard to transform a farmer of twenty-two or twenty-five into a skilled business man or a good mechanic without a bit of training or experience and those who had tried living on what such a man can earn in town have found that farming would have given them a better living at any rate.

If you intend to marry a farmer make up your mind to be a model farmer's wife, for it is poor policy to make a man think you are perfectly content with his occupation and then turn about after the wedding and tell him how you hate the country. If you are positively unhappy on the farm seek some occupation in town, but do not take an unwilling farmer with you if you want to be happy.

TO REMOVE STAINS.

To remove stains successfully from all kinds of fabrics without injuring the fabrics themselves, it is necessary to know that animal fibres are readily destroyed by alkalies, while vegetable fibres are attacked by all but the weakest acids, but are not affected by alkalies.

To remove stains from cotton and linen then it is quite safe to use the rather strongly alkaline Javelle water. This is prepared by placing one-pound of washing soda in a porcelain-lined kettle and adding one quart of boiling water. To this add the clear liquid which separates off when one-half pound of chloride of lime is stirred into two quarts of cold water and the mixture allowed to settle. This solution should be bottled and kept in a dark place. To remove stains, dilute the Javelle water with an equal volume of hot water, and soak the stain in the solution until it disappears.

Probably the best reagent for removing stains from silk and wool is three per cent hydrogen peroxide to which is added four volumes of water and one volume of ammonia. The stain should be soaked in this mixture for a few minutes, then dipped in a ten per cent solution of sodium bisulphide. If the stain is persistent, it may be necessary to repeat this treatment several times, exposing the fabric to the sun and air between treatments.

Bleaching solutions can be used with white goods only, as any reagent which will remove stains will also remove colors.—Col. Ag. College.

CLEANING THE CELLAR.

BY R. G. KIRBY.

The cellar as a storehouse for canned goods and vegetables should be kept scrupulously clean, as authorities state that disease may occur because of the impure air which gathers in some cellars. The cellar that contains impure odors should be thoroughly aired on a mild winter day. The floor should be swept and mopped and all cobwebs brushed down from the walls and ceiling.

One method of removing odors in a cellar is to fill a bowl with lumps of quicklime over which a few grains of dry copperas have been scattered. Slack the lime thoroughly and the steam arising from the mixture will remove bad odors in the cellar. Powdered borax is a good disinfectant to scatter around the floor and corners of a damp cellar. Chloride of lime is an excellent deodorizer and an inexpensive substance to use for purifying the air in damp, ill-smelling places. Charcoal has great powers of absorption and a few bags hung up in the cellar will act as a deodorizer and absorb moisture. Powdered slack lime

will also prevent the musty and mouldy odors which are prevalent in many damp cellars.

Because of the cellar being out of sight the conditions there may become very bad before demanding attention. Such conditions should not be tolerated, especially when the room is used as a place for storing food products. A few hours time can be very profitably used in protecting the food stored in the cellar as it undoubtedly bears a great influence on the general health of the family.

THE PLACE OF EGGS IN THE DIET.

Because of the peculiar food value of eggs, their relative freedom from waste, and the ease with which they may be prepared, their use as meat substitutes at least is often desirable, even when a consideration of their price alone would not so indicate. While this is true of eggs served as one of the principal dishes of a meal, it often is not true of eggs used in cakes, puddings, and other desserts along with meats. It is in the latter use of eggs that the housewife who wishes to economize can try especially to curtail consumption. A fact which makes this latter practice easier is that with the present availability of baking powders, corn starch, gelatin, etc., the use of eggs to insert lightness or to thicken liquids is not now essential as it was in the past.

The principal food element furnished by eggs is protein, the tissue-building element whose presence in considerable proportions also gives meats, fish, milk, cheese, etc., their special food value. Eggs can, therefore, be substituted for the latter foods without materially altering the proportion of protein consumed. In addition to protein, eggs also furnish fat and a number of valuable mineral elements, including sulphur, phosphorus, iron, calcium, and magnesium, in an easily assimilable form, and are believed also to be rich in certain essential vitalizing elements called vitamins.

Like milk and unlike meats, eggs do not contain substances convertible in the body into uric acid. Their shells constitute the only waste materials. Ninety-seven per cent of the portion eaten, a high proportion compared to other foods, is digested. No extended cooking is necessary for eggs and there is, therefore, a saving in time, labor and fuel as compared with many other foods.—U. S. Dept. of Agrl.

HOT LUNCHES IN THE RURAL SCHOOLS.

I am now teaching my third year in the rural schools of Mecosta county. I have found nothing that brings about co-operation between parents, pupils and teachers, like the hot lunches served at noon. Since we began adding a hot dish to our former cold lunches, the parents have awakened to the fact that the teacher is really working for the comfort and welfare of the children. They appreciate it and have shown their appreciation by donating food materials.

Our first attempt was vegetable soup. We purchased a twenty-five cent soup bone, which we cooked until tender. The next morning before school, the older girls prepared the vegetables which had been brought by the pupils. These were added to the stock and allowed to simmer all forenoon. As our school room contains only an ordinary heating stove, our variety has been rather limited as yet. We have had cream of tomato soup, bean soup and hot chocolate. Our next attempt is to be creamed potatoes, and then macaroni and tomatoes. A lady living near the school has offered to bake potatoes and beans for us.

In addition to enjoying the palatable lunches, it affords an excellent opportunity for teaching the pupils how to



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properly prepare the foods, set the table, serve the meals, how to observe table etiquette and wash dishes. The boys do their part by keeping in a supply of wood and water, emptying scraps, and have even done their share of the dishwashing, and are more than willing to do something to "get even" with me for making the hot lunch possible. And just to see the children enjoy their dinner more than repays me for my trouble.—Marion Bell, Dist. No. 6, Austin Township.

We began serving warm lunches this year for the first, and although I had thought of it for some time and we had raised money to buy a three-burner-oil stove, it was a new idea to many of the people of the community, and I thought it best to begin rather slowly. We began by serving a warm lunch only once in a while as a special treat to the children. I was not very sure at first just how it would work out, as we have over sixty children in school, and I was afraid I might be undertaking something that would not prove to be practical. However, I found out that if I had sixty children to cook for, I also had sixty children who were ready to help furnish the food materials and help do the work.

As soon as I was sure that warm lunches could be served without taking much from school time, we decided to have one regularly on Tuesdays. It worked so well and the children begged so hard that it was not long before Friday also became a "hot lunch day." We have quite roomy cloak rooms, and the girls willingly gave half of theirs to be used as a kitchen. Here we placed our stove and cooking utensils. Our cooking outfit is very simple, consisting of a teakettle, a large stew kettle, a frying pan and a large pail. Besides these, we have a large cooking spoon, a soup dipper and some other small dishes and pails. Each child has his own cup and spoon.

The work is all done by committees and the children consider it a great honor to be "appointed" on a committee. A committee consists of two, three or four, according to the amount of work to be done. As a rule, I think the smaller committees do better work, as each one is held more responsible for the tasks.

We begin to prepare our lunch usually at the morning recess, and find that a great amount of work can be accomplished in that fifteen minutes if necessary. We never attempt to have more than one dish on the same day, and as yet, they have been very simple. We have had cocoa, coffee, potato soup, bean soup, tomato soup and vegetable soup. The vegetable soup was the most elaborate of anything we have undertaken, as it contained meat, potatoes, cabbage, carrots, onions, etc., all of which had to be put through a food chopper. However, it proved quite a success and the committee were very proud to have made it.

The parents have been very good about furnishing. I know they have the welfare of their children at heart, and it is worth any trouble on my part that I may be forced to take in order to make these warm lunches possible to see the happy faces of the children as they form in line and march up after their portion of the food, whatever it may be, that helps to make their cold, oftentimes frozen, lunches appetizing and nourishing.—Hazel Laird, Dist. No. 1, Deerfield Township.

Household Editor.—Will someone please inform me how to properly care for narcissus, hyacinth and crocus bulbs which have been in bloom in the house?—S. H. F., Kalamazoo.

Remove the pots to the cellar and lay on the side until the tops are dead and entirely dried out. Then take the bulbs from the earth, shake off all dirt and put in paper bags until fall. Plant outside and they will blossom next spring. They will not do for house blooms a second time.



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10 Cows, Pr. Horses, Bull, Hogs, tools, wagons, machinery, etc., etc., all going with this 150-acre farm in section where they raise 300 to 400 bu. potatoes to the acre. House has 10 pleasant rooms; 2 good barns. \$5,000 would not replace these buildings. Owner, having other business, makes quick sale price for all \$3,500. Very small cash payment arranged. For details see page 9, "Our New Spring Catalogue," filled with bargains everywhere. Copy mailed free. **Strout Farm Agency, Dept. 101, New York.**

Gentlemen's Stock Farm, 140 A.—S. E. Michigan
Adjoining village limits Manchester, Mich. 20 miles from Jackson; 50 from Toledo or Detroit, sidewalk to village; N. Y. C. R. R. station 10 minutes walk, twelve passenger trains daily. Land in good condition, gently rolling, running water in several fields, buildings old but usable, 8 acres oak timber. Ideal building site, fine trees. Price \$14,000.
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25 Acre market garden farm, on Plymouth Road, good buildings, including large green house, cold frames, 50,000 cabbage plants, etc. Sick-ness reason for selling. Immediate possession. Also 220 acre stock farm near Howell, good buildings and fences, best of soil. \$16,000. **Brooks & Newton, 412 Hammond Bldg., Detroit, Mich.**

Farm For Sale: 80 to 160 acres. Soil good. Buildings good. Stone road to city pavements. 1 1/2 miles from Saginaw. 3 miles from sugar factory. Excellent dairy proposition. Terms reasonable. This ad will appear but once. Owner, 102 Fitzhugh St., Saginaw, Mich.

For Sale. 120 acre farm near Alpena. 90 acres cleared. Stock and machinery. Owner dead. Lock box 232, Onaway, Michigan.

\$1050 buys 87 a. farm, good house, barn, etc., orchard, 12 a. clear. 2nd, loam soil, 17 a. much partly cleared, balance woods. Near school, church, stores. \$550 down. **Saunders, Benlah, Mich.**

When writing to advertiser please mention **The Michigan Farmer.**

Markets.

GRAINS AND SEEDS.

April 3, 1917.

Wheat.—With the general belief on Monday that congress would declare that a state of war exists, wheat trading gained in strength, prices advancing 2c for cash. Wheat is very scarce in this country, and while reports conflict as to the quantity of grain that will be required by European countries it is certain that every economy will be required to make it possible to satisfy the necessary wants of our people with the stocks at hand. Probably 40 per cent of winter wheat acreage in this country was benefited by the rains early this week, while the remaining area is suffering severely for lack of moisture and a very large acreage, especially in Kansas and Nebraska, will be abandoned and probably seeded to spring grains. One year ago No. 2 red wheat was quoted on the local market at \$1.22½ per bushel. Last week's Detroit quotations were as follows:

	No. 2 Red.	No. 1 White.	May
Wednesday	2.07	2.04	2.08
Thursday	2.10	2.07	2.11
Friday	2.08	2.05	2.09
Saturday	2.07	2.04	2.08
Monday	2.09	2.06	2.10

Chicago.—May wheat \$1.99½ per bu; July \$1.67½.

Corn.—Buyers appear to be unable to secure sufficient cash corn to supply their needs. On the local market the price made a 3c advance on Monday. A year ago No. 3 corn sold locally at 74½c per bushel. Last week's Detroit quotations were:

	No. 3 Mixed.	No. 3 Yellow.
Wednesday	1.21½	1.22½
Thursday	1.26	1.27
Friday	1.26	1.27
Saturday	1.26	1.27
Monday	1.29	1.30

Chicago.—May corn \$1.22 per bu; July \$1.20½.

Oats.—This cereal has passed the 70c mark with the trade firm and demand urgent at the new high figures. Improvement in transportation facilities has stimulated activity in this trade. Standard oats a year ago were quoted at 48½c per bushel. Last week's Detroit quotations were:

	No. 3 Standard.	No. 3 White.
Wednesday	69	68½
Thursday	69½	69
Friday	70	69½
Saturday	70	69½
Monday	71	70½

Chicago.—May oats 63½c per bu; July 59½c.

Rye.—This cereal has made further advances, with cash No. 2 now quoted at \$1.70 per bushel.

Beans.—Although this market is dull trading is on a higher level. Cash beans are quoted at \$7.60 on the local market. At Chicago Michigan pea beans, hand-picked, are quoted at \$7.60 @ 7.85; red kidneys \$6.50 @ 6.75. Farmers are offered \$7.25 at Greenville.

Seeds.—Prime red clover \$10.75 per bushel; April \$10.40; alsike \$11.50; timothy \$2.60.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$10.10; seconds \$9.80; straight \$9.50; spring patent \$10.60; rye flour \$9.00 per bbl.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$41; standard middlings \$42; fine middlings \$46; cracked corn \$49; coarse corn meal \$49; corn and oat chop \$44 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$14.50 @ 15; standard timothy \$13.50 @ 14; No. 2 timothy \$10 @ 11; light mixed \$13.50 @ 14; No. 1 mixed \$13.50 @ 14; No. 1 clover \$12 @ 12.50.

Pittsburg.—No. 1 timothy \$16.50 @ 17; No. 2 timothy \$14.50 @ 15.50; No. 1 light mixed \$15 @ 16; No. 1 clover mixed, \$16.25 @ 16.75; No. 1 clover \$16.75 @ 17.25.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market is strong and higher with demand good. Creamery extras 42c; do firsts 41c; packing stock 24½c per pound.

Elgin.—The tendency of prices was upward on account of small receipts. The price based on sales is 43c which is an advance of 3c over last week.

Chicago.—The market is firm and higher. Receipts have increased but not enough to keep up with increased demand. Extra creameries 43c; extra firsts 42 @ 42½c; packing stock 28c.

Poultry.—Market is firm with prices for hens and springers higher. Receipts light. No. 1 spring chickens 24 @ 25c; No. 2 do 22 @ 23c; No. 1 hens 25 @ 26c; No. 2 do 23 @ 24c; small do 20 @ 22c; ducks 23 @ 24c; geese 19 @ 22c; turkeys 25 @ 26c.

Chicago.—Fowls and spring chickens are higher but other kinds are unchanged. Fowls 24c; spring chickens 24c; ducks 17 @ 23c; geese 13 @ 15c; turkeys 12 @ 20c.

Eggs.—Market steady with prices 2½c higher. Demand is good. Firsts 31c; current receipts 30½c.

Chicago.—While prices are higher the feeling is easy as lower prices are anticipated. Fresh firsts 30 @ 30½c; ordinary firsts 29 @ 29½c; miscellaneous lots, cases included 27 @ 30c.

FRUITS AND VEGETABLES.

Apples.—Market firm with prices unchanged. Baldwin \$5 @ 6; Spy \$5 @ 7; Steele's Red \$5 @ 7. At Chicago the market is dull and unchanged; stock shows effects of storage. No. 1 stock sells at \$3.50 @ 6.50 per bbl; No. 2 at \$2.25 @ 2.75; orchard run, \$3.25 @ 3.50.

Potatoes.—Market easy and lower. In carlots, at Detroit in sacks, Michigan \$2.40 @ 2.60 per bushel; Wisconsin \$2.40. At Chicago no Michigan stock was reported. Market is active at former prices. Prices range from \$2.25 @ 2.60 per bushel. At Greenville potatoes are very dull, there being practically no demand and very few coming in. The price ranges from \$2.25 @ 2.30 per bushel.

WOOL.

With a general feeling that a tremendous business will develop in the wool circles within the next few weeks the market continues to show increased strength, and prices are gradually working to higher levels. Growers are firm in their demand for high prices. Michigan unwashed delaines are quoted in Boston at 52c; do combing 47 @ 55c; do clothing 44 @ 46c.

GRAND RAPIDS.

Not much change is noted in the potato market, or in beans, but prices are being well maintained. Some outside markets are quoting potatoes at \$2.25, others at \$2. The egg market is somewhat higher this week, dealers paying 29c and express charges for stock outside. Creamery butter advanced 3c this week. In grains, corn is up to \$1.15, with other grain practically the same as last week. Hay is worth \$12 @ 14 on the city market. In poultry, live fowls are quoted at 20 @ 21c. In meats, hogs are worth 15 @ 16½c; calves 13 @ 15c; mutton 13½c; lambs 19c.

DETROIT EASTERN MARKET.

There were scarcely a dozen teams on the market Tuesday morning, and trading was small. No apples were offered; carrots were held at \$1.25; eggs 38c; chickens 32c; rhubarb 50c; loose hay is having slow trade with prices generally ranging from \$17 @ 19 a ton.

LIVE STOCK MARKETS.

April 2, 1917.

Buffalo.

Receipts here today as follows: Cattle 110 cars; hogs 55 d. d.; sheep 34 d. d.; calves 1500 head.

With 110 cars of cattle here today there was a good strong demand for all fat grades. The bulk of the shipping cattle sold 25 @ 50c higher and the medium steers 15 @ 25c higher, with the cows and heifers strong to 10c higher. The bulk of the good bulls sold fully a quarter higher, but the milkers and stockers were about steady. We look for a liberal run of cattle next week and a good trade on all fat grades.

Our hog trade was 10 @ 15c lower on the general run, and pigs unevenly lower, with some classes as much as 50c per cwt. lower than Saturday's best time. A few selected hogs sold at \$15.80 @ 15.90, with one load of fancy at \$15.95, the bulk around \$15.70; pigs as to weight and quality, from \$12.50 @ 13; roughs generally \$13.75 @ 14; stags \$11 @ 12. Our pig trade has been in a demoralized condition for several days past, and while prices look low here, killers do not seem to want them and quite a number are going over unsold.

With a moderate run of lambs today our market opened slow, with prices 25c lower than the close of last week, and lambs weighing over 83 lbs. very slow sale. About eight loads unsold and we look for steady prices the balance of the week, depending chiefly on receipts.

We quote: Lambs \$15.25 @ 15.60; cull to common \$13 @ 15.25; heavy lambs \$14.50 @ 14.75; yearlings \$13 @ 14; wethers \$12.50 @ 13; ewes \$11 @ 12; bucks \$10 @ 11; best calves \$15.75 @ 16;

common and light \$10 @ 13.50; heavy \$8.50 @ 11; grassers \$6 @ 6.50.

Chicago.

April 3, 1917.

Cattle. Hogs. Sheep.
Receipts today..16,000 49,000 18,000
Same day 1916.. 9,637 19,983 18,883
Last week.....48,442 144,037 19,196
Same wk 1916..43,590 149,975 52,176

The Monday receipts of cattle are so small that prices are ruling steady to strong. Hogs are off a dime, with the best at \$15.45 and the poorest light lots at \$14.40. Hogs marketed last week averaged 215 lbs. A sale took place today of four double-decks of feeding and shearing lambs at \$15.45, a new high record.

Cattle started off last week with inadequate offerings of the better class, which made new high records; but killers were not eager to buy other than choice beefs, and despite the fact that less than 19,000 head arrived on Monday, sales of lots below \$12 per 100 lbs. were very largely 10 @ 15c lower before the day was over. The market was in still worse shape on Tuesday, with the chief weakness in steers fetching \$10 @ 11.50, and on Wednesday sales were on an average about 25c lower than at the close of the previous week for lots selling below \$12. Lots of steers selling at \$10.25 @ 11.50 were 60c or more lower than at the recent high time, and a liberal run of Nebraska steers landed at \$11.75 @ 12.20. Following Wednesday receipts of 17,874 cattle, there was a Thursday run of only about 3,500 head, and prices firmed up, although quotations were not quotably higher. Taking the week as a whole, the bulk of the beef steers sold for \$10.40 @ 12.40, choice to extra steers of heavy weight \$12.25 @ 12.95, the top for the preceding week having been \$12.85. Steers classed as good have been bringing \$11.75 @ 12.45, medium grade \$10.75 @ 11.70. Good to prime yearling steers have met with a good demand, with sales at \$11 @ 12.50. Cows went at \$6.80 @ 10.75; heifers at \$6.75 @ 11.50; cutters \$5.80 @ 6.75; canners \$5 @ 5.75; bulls \$6.25 @ 10. Calves sold freely at \$6.50 @ 14.50 per 100 lbs. for coarse heavy to prime light vealers. The stocker and feeder trade was checked by light offerings, and prices were firm at \$7 @ 9.50 for the former and \$8.75 @ 10 for the latter.

Hogs were in good demand last week, and prices increased to \$15.55. Hogs of very light weights sold much less satisfactorily than the heavier offerings. It is the almost universal belief that no better use can be made of corn than feeding to thrifty, growing young hogs. The crop of hogs is short, and high prices seem assured up to such a time as a new crop of pigs can be matured. At the close last week prices were the highest in history, with sales of light bacon hogs at \$14.45 @ 15.25, heavy packers at \$14.90 @ 15.40, light shippers at \$15.30 @ 15.45, heavy shippers at \$15.45 @ 15.55 and pigs at \$10 @ 14, prime pigs weighing from 130 to 135 lbs going the highest. Hogs advanced as much as 20 @ 25c in a single day, quotations a week earlier having been \$14 @ 15.15.

New high record prices were paid in the sheep division last week, the top for lambs being \$15.70 per 100 lbs. Lambs comprised most of the daily offerings, and there was a large showing of shorn lambs. Moderate numbers of feeding and shearing lambs showed up, and some prime native springers from an Illinois shipper were sold straight at \$18.50. At the week's close live muttons were higher than a week earlier, lambs going at \$12 @ 15.50, fat heavy lambs at \$14 @ 15, feeding and shearing lambs at \$13.50 @ 14.75, wethers at \$11 @ 13, ewes at \$8.50 @ 12.50, bucks at \$10 @ 11.25 and spring lambs at \$14 @ 20 per 100 lbs. Yearlings sold at \$12.25 @ 14.35.

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Six Year Average Yield, 60 Bushels

Harris Brothers Seed Co. Yield this Year of Small Mich. Crops, 57 Bushels

Michigan Agricultural College Recommends Worthy Oats

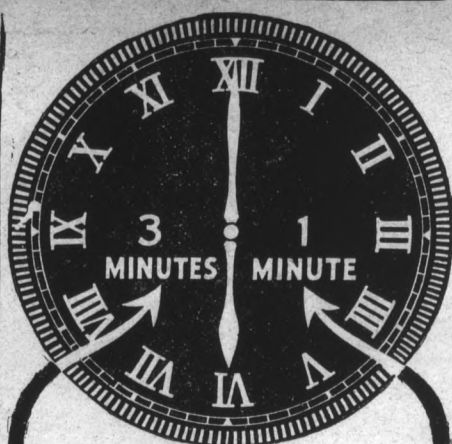
Our stock seed originally from Michigan Agricultural College. Down at M. A. C. where they play with all kinds of oats and make accurate measurements and tests and know what they are talking about, they recommend Worthy Oats as the very best for Michigan and similar climates and soils. Our yield of Worthy Oats was 25 bushels more than our neighbors got with other varieties on similar soils. Think of the difference—at market prices of feeding oats, our crop meant \$15.00 more per acre. You can't beat it for stiff straw and a full, meaty berry—no trick at all to get three bushels of these by weight in an ordinary bag.

THE FEEDING VALUE IS THERE

The fellow who is willing to pay a few cents more to get an additional 20 to 30 bushels yield, by all means try

HARRIS-GROWN WORTHY OATS
Peck, 50c; bu., \$1.40; 10 bu., \$12.50; 50 bu., \$50.00. 5 pound planting sample, by mail, 75c.

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32x3½	10.60	11.80	2.60
34x3½	11.05	12.10	2.70
31x4	13.40	15.10	3.20
32x4	13.70	14.90	3.25
33x4	14.30	15.60	3.30
34x4	14.65	15.95	3.40
35x4	15.45	16.90	3.50
36x4	15.65	16.95	3.60
34x4½	19.70	21.50	4.15
35x4½	20.65	22.45	4.25
36x4½	20.95	22.85	4.35
37x4½	21.80	23.75	4.50
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36x5	24.65	26.90	5.15
37x5	24.00	26.20	5.25

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DETROIT LIVE STOCK MARKET.

Thursday's Market.

April 5, 1917.

Cattle.

Receipts 1810. Receipts in all departments at the local stock yards this week were considerably below those of a week ago. Thursday it rained hard and conditions, especially in the cattle yards, were very bad. They are being cleaned but very slow headway is being made, the company claiming they cannot get men.

In the cattle division the market was very active at an advance of 25c per cwt. on all grades. Buyers were here from Cleveland, Boston and other outside markets and the local dealers seemed to want them. Prospects look good for higher prices from now on. Milch cows of quality sold well but the common grades as usual went for canners. The close was strong as follows: Best heavy steers \$11@11.50; best handy weight butcher steers \$9.50@10.50; mixed steers and heifers \$9@10; handy light butchers \$8.50@9.50; light butchers \$8@9; best cows \$8.50@9; butcher cows \$7@8; common cows \$6@6.50; canners \$5@5.75; best heavy bulls \$9@9.50; bologna bulls \$7.50@8.25; milkers and springers \$50@90.

Bishop, B. & H. sold Newton B. Co. 5 butchers av 884 at \$8.50, 3 do av 943 at \$8.50, 6 cows av 873 at \$6.50, 2 do av 805 at \$7, 1 heifer wgh 480 at \$5; to Sullivan P. Co. 21 steers av 1123 at \$10.40, 14 cows av 1057 at \$7.25, 4 do av 965 at \$5.75; to Walk 1 bull wgh 1730 at \$8.20; to Mindick Co. 2 steers av 1850 at \$10; to Cleveland A. Co. 1 bull wgh 1600 at \$8, 5 cows av 1064 at \$7.75, 1 do wgh 1220 at \$5.75, 2 cow and bull av 1060 at \$7; to Hammond, S. & Co. 20 steers av 1010 at \$10, 5 butchers av 710 at \$8.50 to Sullivan P. Co. 1 steer wgh 810 at \$10.50, 2 do av 1005 at \$9, 5 do av 776 at \$8.25, 2 do av 1325 at \$10, 2 do av 990 at \$9, 2 cows av 965 at \$6, 3 do av 1000 at \$5.75, 4 do av 957 at \$5.75, 4 do av 1160 at \$7.50; to Kamman B. Co. 14 steers av 976 at \$9.75 to Thompson 21 do av 1005 at \$9.70; to Newton B. Co. 22 do av 1125 at \$10.25; to B. L. Co. 6 do av 1061 at \$9.50, 5 cows av 1175 at \$8.35, 3 do av 1200 at \$7, 5 do av 1110 at \$8.50; to Cleveland A. Co. 1 do wgh 1280 at \$8; to Hammond, S. & Co. 1 do wgh 1100 at \$8.50, 5 steers av 1190 at \$10.75, 1 do wgh 700 at \$9.15, 11 do av 800 at \$9.15.

Veal Calves.

Receipts 1212. The veal calf trade was active as it always is at Easter time, and prices on all kinds opened and closed Wednesday strong at last week's prices. A few extra fancy brought \$15.75@16, but the bulk of the good ones brought \$15@15.50; heavy \$7@9. The close on Thursday was not so good and was fully 50c lower than the opening.

Erwin, S. J. sold Mich. B. Co. 5 av 180 at \$15.50, 27 av 135 at \$15; to Thompson 28 av 135 at \$15, 4 av 100 at \$12, 1 wgh 200 at \$16, 4 av 95 at \$11, 6 av 150 at \$15.50, 11 av 155 at \$15, 5 av 145 at \$15.50.

McMullen, K. & J. sold Mich. B. Co. 30 av 130 at \$15; to Parker, W. & Co. 23 av 150 at \$15.25, 4 av 125 at \$15, 5 av 125 at \$11, 6 av 135 at \$14.50, 13 av 125 at \$15.

Sheep and Lambs.

Receipts 1375. The supply of sheep and lambs was small but evidently large enough for the demand. Lambs were 25@50c lower than at the same time last week, but sheep held full steady as follows: Best lambs \$14.75@15; fair lambs \$14@14.50; light to common lambs \$13.25@13.75; fair to good sheep \$11@11.50; culls and common \$7@9.

Bishop, B. & H. sold Parker, W. & Co. 27 lambs av 70 at \$14.75, 51 do av 77 at \$15.25, 5 sheep av 95 at \$9.50; to Nagle P. Co. 4 do av 120 at \$9, 20 clip lambs av 75 at \$11.75; to Swift & Co. 213 lambs av 85 at \$15.25.

Sandel, S. B. & G. sold Thompson 19 lambs av 85 at \$15.

Erwin, S. & J. sold Thompson 28 lambs av 75 at \$14.75; to Mich. B. Co. 2 sheep av 105 at \$10.50, 57 lambs av 67 at \$14.50; to Barlage 108 do av 85 at \$14.75, 8 sheep av 95 at \$10, 7 lambs av 110 at \$13.50.

McMullen, K. & J. sold Young 99 lambs av 75 at \$15.

Hogs.

Receipts 5,777. In the hog department the trade was 10@15c higher than on Wednesday. Pigs sold at \$12.25@12.50 for good; mixed hogs \$14.75@15.25.



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We want new laid stock and can pay top prices for them.

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Consign your Hay to us. If you prefer to sell, describe quality, quote prices your track. The E. L. Richmond Co., Detroit. Reference, your bank.

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Send for prices on berry baskets and 16 qt. crates. Special 200 A grade berry baskets postpaid for \$1.35 or 200 B grade for \$1.25 within 150 miles of Lansing. No waxlined paper baskets this season.

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A little paint in time saves expensive repairing. No advance in price. Colonial Quality Guaranteed Paint—\$1.35 gal. (old price). Colonial Barn and Warehouse Paint—85c gal. Write today for color card, or order direct from this ad.

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POULTRY

BARY Chicks, S. O. B. Minorca (Pope strain), S. O. B. White Leghorn, Farris, 250 to 220 egg strain, free range, prices reasonable. Herbert Hammond, Williamston, Mich.

S. C. White and Black Leghorn, Hatching eggs for strain, beautiful birds and great winter layers. Prices reasonable quality considered, write for mating list. Fairview Leghorn Farm, Gladwin, Mich.

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

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WHITE Wyandottes, A. 1 layers. Eggs for hatching, \$1.25, \$3 for 15, \$7 per 100. Special matings \$5 for 15. DAVID RAY, 709 Norris St., Ypsilanti, Michigan.

White Plymouth Rock Eggs For sale, 100 for \$4.50. Fishel Strain. Wesley Elliott, Ypsilanti, Mich., R. 3, Box 90.

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

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My new book tells everything. Fill out and mail the coupon and I'll send the book FREE. I'll tell you also where and how you can get enough SALO VET to feed your stock 60 days and have your money refunded if it fails to do all I claim. Mail the coupon now. Address

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of quality guaranteed to 1,500 miles. Eggs for hatching at low prices. Bar. Rocks, S. C. W. Leghorns, S. C. and R. C. Reds, W. Wyandottes, Buff and W. Orpingtons. Chicklet catalog free. **GOSHEN POULTRY FARMS, R-19 Goshen, Indiana**

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

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CHICKS

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

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

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"200-Egg" Pedigree White Leghorns

Baby Chicks, Eggs for Hatching "Bred-to-lay" strain, vigorous, healthy stock, all sired by Missouri Experiment Station males with pedigrees of 200 to 274 eggs in one year. Chicks, \$25 for 100, \$100 for 500. Eggs for hatching, \$10 for 100. Thousands of satisfied customers. Book your order at once for eggs for hatching and baby chicks of quality. We sell Magie Brooders, best brooders made, \$16.50 each, capacity 300 to 500 chicks. Catalogue, **Michigan Poultry Farm, Lansing, Mich.** "Michigan's Largest Poultry Farm."

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Large, Great Layers, Pure White

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We have about 40 S. C. White Leghorn cock birds for sale. These males are from 200 egg strain and are offering them for \$3 each. Also about 200 fine April hatched pullets at a great bargain. Eggs for hatching March and April \$5 per 100. We will gladly give references on all our sales. **KRETEL BROS., Box 624, East Lansing, Mich.**

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

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

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

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

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

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

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

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RHODE ISLAND REDS AND PLYMOUTH ROCKS Males 5 to 12 lbs., according to age \$2 to \$5; P. B. hens weight 5 to 10 lbs., eggs 15 for \$1.00; 100, \$5; 120, \$6. Mammoth Bronze Tom Turkeys, 8 to 8 lbs., according to age \$6 to \$25, 10 eggs \$4. **A. E. Crampton, Vassar, Mich.**

R. I. Red Chicks and Eggs. Both Combs. Dark Red. Winter Layers. Bred by more Michigan farmers than any other strain Catalog. free. **Interlakes Farm, Box 39, Lawrence, Mich.**

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140 Egg Size Prize Winning Model—Hot-water—Double-walled—Copper Tank—Thermometer Holder—Deep Nursery—Self-regulating. When ordered with \$4.85 Hot-water 140 chick Brooder, both cost only \$12.50.

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gest Prize—Free Book "Hatching Facts" tells all—Gives short cuts to Poultry Success—Write for it today. **Jim Rohan, Pres.**

Belle City Incubator Co., Box 14 Racine, Wis.

90 Days' Trial

Both are made of Calif. Redwood. Both for \$11

Incubator is covered with asbestos and galvanized iron; has triple walls, copper tank, nursery, egg tester, thermometer, ready to use. 30 DAYS' TRIAL—money back if not O.K. Write for FREE Catalogue.

IRONCLAD INCUBATOR CO., Dept. 117 Racine, Wis.

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IRONCLAD INCUBATOR CO., Dept. 117 Racine, Wis.

Spring Management of Chicks

HATCHING chicks, either by the use of hens or with incubators, is an easy matter compared with getting them well started toward early maturity. To rear a fair percentage of young chicks one must have a thorough knowledge of the requirements necessary for their growth and development.

During the first week or ten days after they are hatched special precautions must be taken to guard against bowel trouble. Withhold food for the first forty-eight hours and give them no water until a few hours after the first food is given them, but after that time a supply of fresh water should be kept constantly before them. As a general proposition dry feeds are preferable; the feeding of soft mash prevents the chicks from securing as much exercise as is necessary for their proper growth and development, besides eating soft food too greedily and standing around has a tendency to weaken their digestive organs and powers to resist disease. Young chicks that are fed a mixture of small grains scattered in a litter of cut clover or alfalfa keep busy for two or three

a decided advantage over those that are started earlier and fed succulent vegetables and meat scraps. Of course, these feeds are valuable and must be fed if the chicks are hatched early, or when they are reared on a small lot, but it has been my experience that pullets of the American breeds hatched before the first of May and given proper treatment and plenty of range will be sufficiently developed to begin laying before cold weather comes. The Mediterranean breeds hatched two or three weeks later will be ready for laying late in the fall. When one desires earlier hatches, and has the equipment necessary for successful brooding during the cold weather, it will pay to hatch early chicks, but it is a mistake for the average farmer to attempt to imitate the experienced poultryman, unless he has adequate equipment and a fair knowledge of mechanical brooding. It is not the number of chicks we can hatch out during the proper season so much as it is the number that we can rear and develop into efficient producers before winter comes.

Care must be taken to keep coops, brooders, mother hens and all of the equipment clean. The chicks must be examined closely at short intervals for lice, and if they are found, or there are any signs of their work, the chicks should be greased on top of the head and under the wings with melted lard twice a week until the pests are destroyed. The coops and brooders should be disinfected once a week with crude carbolic acid, or some good commercial disinfectant, to keep away disease germs.

New York. W. MILTON KELLY.

POULTRY HINTS.

The following interesting and instructive points were brought out by the speakers at the Poultry Husbandry Session during Farmers' Week at the Michigan Agricultural College.

Never give little chicks cold water; even in hot weather temper water that is just pumped before giving it to the chicks.

Skim-milk or buttermilk is one of the best of poultry feeds. Sour milk is as valuable as sweet, but the kind that is fed should not be changed—always feed the milk either sweet or sour.

Hens fed on sound grain only will give the strongest hatching eggs.

A hatchet is the best poultry remedy, but if medicine is desired use castor oil; this may be best administered in capsules.

Breeders of Rhode Island Reds should keep a brick over the door; a typical Red has the shape of a brick, and an even color from beak to tail.

Rocks and Wyandottes should be fed carefully, for they have a tendency to fat-up on the inside.

The incubator should start to hatch at noon on the twentieth day.

The first chick hatched is the first all through life.

Fence in the garden and not the chickens.

White lobed hens always lay white eggs.

A well conducted farm should be run like a department store, and the poultry department should receive its just share of attention.

Ingham Co. A. MALONEY.

THE BROODER.

The choice of a brooder is a rather perplexing problem. There are so many different kinds on the market, and each is able to present such attractive features, and there is so little unbiased information on the subject that the poultryman must generally gain his knowledge by experience. At least I tried very nearly everything from the fifty-chick lamp brooder to the 1000-hours each day on a good range have

hours scratching and hunting for the grain, thus securing the necessary exercise.

The First Feeding.

Oat meal, cracked kaffir corn, millet and grit are excellent materials to use in the young chicks' ration. We feed our chicks twice the first day they receive grain, three times the second day and four times a day after that until they are six weeks old. It is a mistake to feed too heavy rations mornings and noons. The chicks thrive better when they are allowed to become hungry for the evening meal so that they will eat enough to last them until morning. After they begin to scratch in the litter for the grain feeds we substitute cracked corn, whole wheat and buckwheat for the ration fed at the beginning.

Pure fresh water is just as important as clean and wholesome food and should be kept constantly before the chicks after they are three days old. The drinking vessel must be kept clean, for filthy water means sick chicks, and is a prolific source of disease germs that work havoc in the flock.

On the average farm there is little to be gained by hatching the chicks too early. The ideal time for young chicks to come is about April 20. Then by the time they are two weeks old the weather conditions are usually favorable for allowing them to run outside for a short time each sunny day. Never allow them to hump up outside and become chilled, but so long as they are running around looking for choice bits of food they will not be injured by the exposure. The run in the open air where they can exercise their instinctive choice of grit and bits of food causes them to eat larger quantities and to assimilate it better. Then, too, the chicks that run outside gather green food, and insects too, add to the variety of the rations.

Some Other Essentials.

Green food and meat are necessary. No prepared feeds can take the place of the tender bits of grass and small insects. Chicks that run out a few

sidered that my brooder knowledge was anywhere near complete.

There is no one system of brooding that is best under all conditions. The old hen may have many disadvantages but is a mighty efficient brooder, and with proper attention will raise a goodly portion of her flock. On farms where but few chicks are hatched each season it is generally best to let the old hen rear them; but where any great number are raised the hen is an expensive, and often unreliable brooding system. Much more time is necessary to take care of a dozen broods with hens than a hundred and fifty chicks in a brooder, and time is one of the big items of expense in raising poultry. Further, during the early spring, when they are most needed, broody hens are scarce. Where poultry keeping is conducted as a business proposition artificial brooding is a necessity.

There are five types of artificial brooders. Only two of these are of much interest to the farmer or poultryman; however, in order that the situation may be better understood I will speak also of those types that are of but passing interest.

A few years ago fireless brooders had quite a boom. These work on the same principle as the fireless cooker; not supplying any heat but conserving that already present. Under favorable conditions chicks can be raised quite satisfactorily in these brooders, but more labor is required than where the hens are used. As a commercial proposition the fireless brooder is never seriously considered.

A long narrow house fitted with some form of hot water heating plant is termed a pipe system brooder. They have many advantages but are very expensive; this prohibits their use except on the special poultry farms and there they are being replaced by less costly forms of brooding equipment.

Of late fuel oil brooders have received considerable attention from poultrymen. These are of two kinds; those burning kerosene or distillate, and those burning gasoline. The former originated, and have been quite generally adopted, in the great poultry district around Petaluma, California. When used with the cheap, easily obtainable distillate as a fuel and under the conditions present in this district these stoves have worked well, but when used with kerosene and in other sections of the country they have not given satisfaction. The fuel cost is excessive, and the burner has a tendency to soot-up, clog the chimney, and cause trouble. A few years ago the Cornell Station developed a gasoline brooder. When a high-grade gasoline could be purchased for about twelve cents a gallon these brooders were very satisfactory; but the present high price of gasoline makes their operation expensive, while the low quality of most of the gasoline that is on the market today often causes serious trouble by causing the burner to clog and putting out the flame. Under present conditions a fuel oil burning brooder is not likely to prove satisfactory.

There are many different kinds of lamp brooders on the market but about the only kind found practical by commercial poultrymen is the portable hover; this is a heating apparatus and hover only, and is so constructed that the whole outfit may be moved from house to house as occasion demands. Portable hovers are made in various sizes; perhaps those capable of easily handling 100 chicks are the most practical. Two of these placed in an eight by eight colony house will prove very efficient, and during mild weather will provide nearly ideal brooding conditions. This combination is particularly valuable for the man whose business has outgrown the hen brooding stage, but who is not quite ready to brood in large units.

Coal burning brooders are a new type; they have scarcely passed the

experimental stage. Practical machines have been on the market for only four or five seasons, but in this time they have gained a permanent place in the poultry business. These brooders are made in many sizes, but for the poultryman brooding less than 3000 chicks a season the 300-500 chick size is best. One of this size may be purchased for about \$16, and when placed in an eight by eight colony house will brood a flock of 250 chickens very efficiently. The cost of fuel ordinarily will not exceed fifty or sixty cents a week, and the labor necessary to brood the chicks will be reduced to a minimum.

In summing up I may say that where only a few chicks are raised the hen will generally give the best results; where an incubator is used, and the chicks are hatched in lots of less than 200 a portable hover will prove satisfactory; while for the man hatching in greater numbers one of the coal stove brooders is likely to prove to be the most efficient form of brooding equipment.

A. MALONEY.

HATCHING GEES.

Will you please tell me how to raise geese and take care of the goslings and if eggs can be hatched by an incubator, and how to take care of them? What do you feed goslings on the first few days? SUBSCRIBER.

Goose eggs can be successfully hatched in incubators, but it is not a common practice, because it is doubtful whether they would do well raised in brooders.

Either geese or hens are commonly used for hatching and rearing purposes. If the eggs are hatched by hens or incubators, it would be advisable to add moisture to the eggs during the first week by sprinkling the eggs or nest with warm water. From four to six eggs are usually placed under a hen, and from ten to thirteen eggs under a goose.

If hatched by hens, the hen should be kept confined, and goslings not allowed to go into the water, especially if the water is cold. To be assured of success in raising goslings, they should not be hatched until grass pasture is fairly good, as grass is their chief diet.

In addition to that, they should be fed any of the mashers recommended for chickens or goslings. Special care should be taken in seeing that all of the feed is cleaned up at each meal, as leftover food is very often a source of disease.

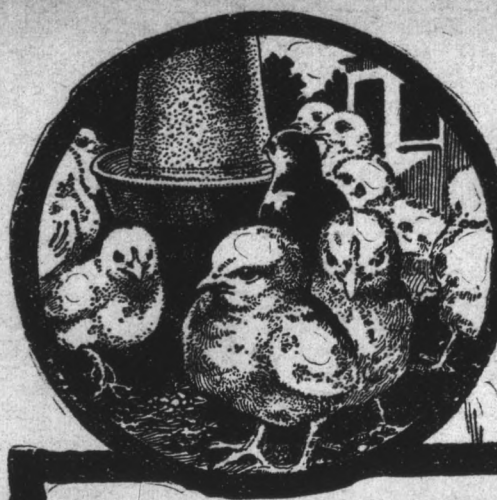
FROST COMBS AND VIGOR.

Please advise me what to do to make my male birds mate. I have the R. I. Red hens and I bought three male birds of the same kind, but they won't mate. They don't fight and are peaceable but two of the males have frosted combs. C. F. H.

Undoubtedly the frosted combs have greatly interfered with the vigor of your cockerels. It is commonly considered that birds with frosted combs are of practically no value for breeding purposes.

It would undoubtedly be best for you to eliminate the two from your cock, and if necessary buy other cockerels from some breeder who has a reputation for raising vigorous stock of the kind you wish to breed.

The poultry house should be placed away from other farm buildings where the drainage is good. Dampness is very dangerous and the floor of the poultry house must be higher than the outside soil. A house should never be less than fourteen feet deep and four square feet of floor space should be allowed to each bird. When a cement floor is used in the house it should be made in creases to prevent the hens from slipping. Don't build the houses too high or it will be difficult to keep the birds warm. By using one-fourth inch mesh wire on the windows the wire will break the wind and keep out sparrows.



Save your chicks!

Chick loss is not only chicks that die, but chicks that live as weaklings, wasting feed and work. Make sure of sturdy, quick-growing chicks by guaranteeing their health with

Dr. LeGear's Poultry Powder

This Powder is my own prescription, from 25 years' experience both as a Veterinary Surgeon and as a practical poultry raiser. My Poultry Powder will not only keep disease away—gapes, leg weakness, bowel trouble, etc., but it will keep chicks' digestion toned up, so that they will develop much faster.

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(in surgeon's robe)
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1892. 25 years
Veterinary practice.
Authority on ailments of stock
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Write Dr. LeGear about any stock or poultry trouble. He'll tell you what to do and save you Veterinary Fees.
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Free to Farm Hands

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Offers highly bred tested farm poultry: Stock that, with natural and convenient farmer care, will give eggs thru the winter; stock that has given eggs thru the winter just passed.

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

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

Day-Old Chicks and Hatching Eggs

Single Comb White Leghorns
Single Comb Brown Leghorns
Single Comb Buff Leghorns (Limited).
Single Comb Black Minorcas
Barred Plymouth Rocks
White Plymouth Rocks
Buff Plymouth Rocks (Limited).
Rose Comb Rhode Island Reds
White Wyandottes
White Pekin and Indian Runner Duck Eggs
Day-Old Ducklings
Geese Eggs
White Holland Turkey Eggs

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

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

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

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Baby Chicks: 50,000 S.C. White and Brown Leghorns at \$10.00 per 100, \$90.00 per 1,000. Safe arrival guaranteed. Also Hovers and Brooders. Catalogue free. Wolverine Hatchery, Box 221, Zeeland, Mich.

Additional Poultry Ads. on Page 465

Only \$2 DOWN and One Year To Pay

For any Size—Direct from Factory

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

\$24 BUYS THE NEW BUTTERFLY

No. 2 Junior—a light running, easy cleaning, close skimming, durable, lifetime guaranteed separator. Skims 95 quarts per hour. We also make five other sizes up to our big 800 lb. capacity machine shown here—all sold at similar low prices and on our liberal terms of only \$2 down and a year to pay.

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

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On account of high cost of feed, and the unprecedented high price of meats, many farmers, either from necessity or shortsightedness, are stripping their farms of meat producing animals.

Small pigs, underfinished calves and even brood animals are going to the slaughter house by the millions.

This, if continued will create an appalling condition. The meat supply of the world is rapidly diminishing and the burden of taking care of the future rests with the American farmer.

And in view of the conditions that confront the nation, we, as American citizens, appeal to the patriotism of the American farmer to prepare for the greatest meat shortage the world has ever known.

Save the brooders, finish the meat animals, and bend every effort toward replenishing the supply of sheep and hogs and you will do your share toward saving the country from famine.

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Grange.

PUTTING CULTURE INTO WORK.

Written by, and read at recent meeting of Okemos Grange, by Miss Rose Grettenberger.

Culture, or education, should lead to the full development of all one's powers. It deals with the physical, intellectual, and moral man. It should give one a fully developed and well-trained body, a furnished intellect, and a cultivated will power.

The spirit of self-help is the root of all genuine growth in the individual. Much of success is due to the influences of early surroundings. Country life is well suited to the development of sturdy character, and country boys and girls may well rejoice because of the opportunities for character building, with which they are surrounded. The question arises, "Do they make use of these opportunities?" The present mail facilities, and the low price of excellent periodicals, as well as the works of the masters in literature, now make it possible for every home in country or town to contain the treasures of the world's best thought.

If one has been trained from childhood for some useful occupation, he may consider such training a great blessing, for it has been a strong agency in his full development. The training of the hand is inseparable from the training of the eye, and the more complete this training is, the more perfect master of himself the individual becomes. Training of the hand develops one's power of thought and reason. The workman must study his problems of construction and this study demands the closest attention, as a result of these efforts, he becomes a forceful thinker.

Culture gives confidence. Self confidence is based upon two things: (1) inherent ability; (2) experience, which includes preparation for one's vocation. When once we have mastered a certain principle, learned a fact, formed a judgment, we should use what we have acquired and thereby gain new knowledge.

Sir Walter Scott said: "The best part of every man's education is that which he gives to himself."

Set for yourself some task requiring care and skill of the hand, take pride in it, and let the product be the result of your best effort, whether it be a piece of needlework, the making of bread, or the construction of some useful tool. As your skill increases, you will feel an increase in the confidence in your power to accomplish something while difficulties will be more easily conquered, and life will be proportionately more interesting.

Education includes ability to use our knowledge, and is essential to success in any calling. More than this, a well furnished intellect and a cultured will are essential to our own happiness, and the most powerful of all arguments for culture is the effect of such culture upon the individual. It is always well to be prepared for emergencies, therefore everyone needs to know much more about his vocation than what may be necessary to discharge his daily routine of duties.

The measure of your knowledge of any subject is your ability to use that subject. You have studied arithmetic. Can you go into a store, take an invoice, add the cost of transportation to the original cost of the goods, and to this the merchant's required per cent of gain, and mark the selling price upon the various articles named? Can you go into an office and reckon the interest or discount on the bills that may be presented to you?

It is said that "Agriculture is the oldest of the arts and the most recent of the sciences." Again, "Perfect agriculture is the true foundation of trade

and industry—it is the foundation of the riches of states." In studying agriculture, we find it to be one of the most interesting and most profitable sciences—one that is at the present time making most wonderful advance. It may be said to consist of a mingling of chemistry, geology, botany, physiology, and many other sciences. An intelligent understanding of it will add much interest to what is otherwise hard work, and as a natural consequence, the pleasure of such work may be greatly increased. Without some of the science, or the "Why of Agriculture" the farmers of this country work at a disadvantage. With some knowledge of this science, the residents of our towns and cities would gain respect for this calling which contributes so largely to the general wealth and welfare of this country.

Along with the acquisition of knowledge, one should cultivate the higher feeling, and train the will. A strong personality is essential to success. Goethe said: "He who is firm in will holds the world to himself." One's personality and his education usually determine his position in public or private life. If he have strong personality and a liberal education, his position is assured. But if his will power be weak or his sensibilities dull, however much knowledge he may possess, he will never become a potent factor in society.

A personality that brings success depends to some extent upon heredity, but is largely the result of right training. It must include good manners, ability to converse readily upon ordinary topics, at least, a kindly feeling for others, ability to make decisions quickly, and firmness.

May we each examine ourselves and determine to what extent we possess these essentials of a strong personality. Further as the scriptures admonish in regard to our work, "Study to show thyself approved unto every good work, a workman that needeth not to be ashamed."

To the progressive man, the ideal of yesterday will not suffice for today, neither will that of today answer for tomorrow. The man is not merely the child older grown, he not only sees more, feels more, knows more, but is more.

The Quaker poet sang of his boyhood:

"Still, as my horizon grew,
Larger grew my riches too."

Our larger riches are limited only by our capacity to enjoy our surroundings. A broad and liberal culture must come as the result of one's own effort.

AMONG THE LIVE GRANGES.

Discuss Farm Loan Law.—At the third meeting of Ashley Grange, held March 9, after the usual business had been transacted, Grange was closed for the discussion of the National Farm Loan law. Our worthy chaplain, Mrs. Charles Kerr, kept the work from becoming wearisome by the occasional reading of a funny story. Certain "snags" were encountered in this new law:

1. The limit of interest the farm loan banks may charge is six per cent whereas money is seeking investment at five per cent. The law favors the banks rather than the farmer. Uncle Sam's middleman mania must be paid for by the farmer. The government borrows the postal savings of the farmer and others at two per cent, but reverse it, and let the farmer borrow of the government and the rate of interest is multiplied by three—it is six per cent.

Foreign countries are more considerate of their farmers. The Canadian farmer could borrow government money to drain his farm at two per cent. They do not saddle the expense of the middleman on their farmers but lend the money direct at a low rate of interest.

2. Default in the payment of an annual payment by any member of the association of borrowers falls on the other members of the association. The loan bank is doubly secured by the mortgage given by the borrower and the endorsement of each loan by the members of the association.

Farmers' Clubs

CLUB DISCUSSIONS.

Organize Live Stock Shippers' Association.—Through the efforts of the Caledonia Farmers' Club a mass meeting was called March 16 for the purpose of organizing a Farmers' Live Stock Shipping Association. With the help of Mr. C. J. Miller, of Athens, Mich., and Mr. R. B. H. Tieche, of Nashville, Mich., an organization was completed with the following officers: President, L. G. Kaechele; vice-president, Jess W. Pickett; secretary and treasurer, Sid Geib; manager, George W. Pickett; board of directors, Gilbert Klingman, Fred W. Ruehs, Melvin Shisler, Lewis Kaelhele, Jess W. Pickett, Sid Geib, Bert Niemeyer. We think this is the first live stock shippers' association in Kent county. This organization will be known as the Caledonia Shippers' Union.

Discuss Vegetable Garden.—Peach Grove Farmers' Club met in March at the home of Mr. and Mrs. O. W. Braman. The meeting was called to order by the president. There being no business the meeting was turned over to the program committee. Mrs. Mawby gave a talk on vegetable gardening, which was followed by a few remarks by Mr. Robinette, Mrs. Robinette and Mr. Braman. Mrs. Robinette gave a paper on "The Home Flower Garden." Mrs. Braman gave a paper on "Shrubbery and Plants for the Lawn." Mrs. Mawby gave a talk on St. Patrick. Current events were given by Ruby Finch. Song by Sylvia Mellema. A vote of thanks was extended to the host and hostess and the meeting adjourned to meet next at the home of Mr. and Mrs. S. G. Penyon.

A Big March Attendance.—Genoa Farmers' Club met at the pleasant home of Mr. and Mrs. H. M. Haller, on Saturday, March 10. After the Club, which was unusually well attended, had partaken of a bountiful dinner, the meeting was called to order by President L. R. Richards, and an interesting program was carried out. H. M. Haller gave an address on the State Convention System, making its function clear to those who never attended one. J. G. Hayes gave a general talk on "Gleanings of the County Institute," summarizing all the main points on subjects discussed there, and renewing them in the minds of those present, as well as bringing things of interest to those unable to attend the institute. Mrs. T. S. S. Curdy gave an interesting account of the women's section of the institute, also summing up the chief points of interest. Mrs. Hayes read a fine paper, "The Chancellor of the Exchequer," proving that this is the solution of the pocket-book problem. The idea is for the man and wife to each have a share to spend for their own use as they see fit. After the question box, in charge of E. G. Lawson,

THE PASSING OF TOAD HOLLOW.

(Continued from page 459).

"First thing, then, we want to take the name off'n the district. Not one of us women would raise Ned if our houses were stood over a toad holler, an' no teacher can keep it clean enough for self-respectin' youngsters to set in. That old school house is a good enough school house if it was painted up an' scrubbed out an' the draw filled an' dreened an' decent out-houses built an' then if us women'll just remember to see that it's kep' one-half as clean as we keep our houses where the kids won't spend half their time if we do the right thing hereafter. Jud says he'll do his part—"

"An' Joe will, too. He's tired o' the way things 've been going, too," Emily promised.

It was after dark before Sarah Heffelfinger drove into the home lane. She had talked with every man and woman in the district, including renters and foreigners, whose importance had grown in her mind in one night of home and neighborhood analysis.

The district road supervisor loaned shovels and a team and joined the men and teams in Toad Hollow at eight o'clock the next morning. At noon the smell of bacon and coffee called them in to the fresh scrubbed school house. Soap and hot water and brushes and rags handled by neighbor women who

secretly thrilled to the new and friendlier order of things, worked no wonders but it cleansed windows and desks and floor for the first time in the history of the district. Their thoughts given point by Sarah Heffelfinger the women admitted it was their business and nobody else's to see that their children's school home was fit to sit and breathe in.

When the men had eaten and gone back to their filling in, and the women had cleaned and packed away the dishes and sat mending, Sarah proposed they agree to get together at the school house one Friday afternoon a month.

"Summer's coming and I wish we c'd meet every two weeks an' bring all the children an' our sewin' an' have our men come to dinner an' us make a day of it. I can always get more done if I sew with somebody an' I'd just as lief bring my sewin' machine every time." It was thin little neighbor-starved Cassie Sanders who proposed this, and Emily Waddell added, "Joe said he'd see the other directors an' see if they'd put a reg'lar cook stove in, 'stead o' this wornout ol' heater. We could get up our dinners on that, an' the children an' teacher could heat up their dinners, when school commences—an'" Emily Waddell's face shone twenty years younger, "I'd like to give the kids a candy pull, an' we c'd all have our Thanksgiving dinner together, an' maybe a Christmas tree."

There was no doubt the women all agreed with Emily.

"My Ellie misses her little brothers an' sisters an' she wrote if it wasn't for this bein' such a dull place she'd give up clerkin' an' come home. I wish we c'd do something for the young ones as they grow up—maybe they wouldn't all be so crazy to leave home—oh, I—" Minnie Powers caught herself up as she remembered Bud Heffelfinger and Bennie Waddell, not yet found, but Sarah Heffelfinger had stopped darning to listen to another tell her findings, reasoned out, perhaps in her dark nights when she lay and grieved that fifteen-year-old Ellie had gone out among strangers and dangers to search for her own fun.

"You're right, Minnie—I know you are right, but it took my boy's slippin' away from me to show me. Oh, I don't know why I've been so dumb—an' blind—an' selfish! We had our good times when we was little an' then we shut up just like clams when our own come on an' needed somethin' doing. When my babies was all little an' safe with me I wouldn't a dreamed the good Lord 'd had to take a club to me to keep me awake."

"I ken't mek spitch," Dutch Voght's wife hesitated, "I like mine shillun go to school—dere fader ees sad eef the school ees not keep—dere fader he play wid hees shillun—me, I bay, also, all ol' country games, an' dance, ah, yess, small legs don't git tiard—dey mus move, move, an' so dere fader an' me we geef balp but we no ken titch mine shillun fetch Anglish book about all animal—'Read, mudder!' an' I no can read, an' dey beg dere fader an' he ees sad for he ken't read in Anglish, too. Eef you git titcher mine shillun will min' an' dere fader ees happy an' me—I ken't mek spitch do."

"We're always going to have a teacher after this Mrs. Voght" Sarah Heffelfinger explained, "an' we want you to come an' bring your babies an' sewin' an' dinner an' have your man and the children come at noon an' we'll sew an' visit an' by September we'll have our children taught to mind the teacher, too—an' we'll practice up on playing, too, an' we'll want to learn your games."

"I come, yess, dere fader he ees glad," nodded the heretofore unspeakable foreigner who, in the speech she couldn't make had voiced from her simple mother heart almost the whole duty of parents.



"I fired the blasts"

by pushing down the handle of the electric blasting machine," writes Mrs. J. R. Cronister, Martha, Pa. "I certainly enjoyed seeing those big stumps split up and thrown out. You surely are right in saying that

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is the easy, quick and cheap way to get rid of stumps. The pictures and directions in your book made everything so plain."

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Read What These Sheldon Owners Say

I and my hired man laid a feeding floor for my hogs, 24x24, in one day; also put floor in my cow barn. My neighbor liked it so well I am not able to keep it at home.—ANDREW CHRISTENSEN, Hancock, Minn., U. S. A.

We have used the mixer during past year for putting in cement foundations for a complete set of farm buildings, including silo, and like it very much.—DANA WRIGHT, Janesville, N. D.

Last year I bought a cement mixer from you with which I am well satisfied. It did not take long for it to pay for itself and I surely can recommend it to anyone needing a big mixer at a small price.—W. F. PARKS, Martinton, Ill.

I am more than busy with my Sheldon Concrete Mixer. Have already got the job of mixing concrete for the bridges in this township.—JOHN ROSS, Sparta, Pa.

Last spring we purchased of you a set of castings to make a concrete mixer. It was constructed per the plans furnished and it surely worked great.—D. M. BAUER, Prospect, Ill.

FREE PLANS

Make your own concrete mixer. You can do it at a cost so low you can not afford to mix concrete by the shovel method. Along with our iron parts we send Free Plans and permit for making your own machine. A good way to get a practical mixer at a small expense. Or, we will sell you the complete machine, ready built.

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If you buy a Sheldon Mixer for your own use, you can make many times its cost in a season by renting it to your neighbors. Or, if you want to go out with the mixer on contracts, you can easily earn \$5 to \$20 a day. Our customers are doing it right now. The jobs go to the man with a Sheldon Mixer every time.

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for a small investment to reap the bene-
fit of a large expenditure of capital and
years of expert breeding.

Flanders Farm, Orchard Lake, Mich.

CATTLE.

ABERDEEN-ANGUS

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.
WOODCOTE STOCK FARM, Ionia, Mich.

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

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM GUERNSEYS

Average yearly production 422.3 lbs. of fat, three
fourths of them making their records as two year
olds. By the use of a pure bred sire, a big im-
provement can soon be attained if the right
selection is made. The breeding of the Beach
Farm Herd is as good as can be found, and we
guarantee them to be free from contagious dis-
eases and to be satisfactory in every way or
money refunded. Write and let us tell you about
them.

CAMPBELL & ANGEVINE,

Coldwater, Michigan.

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

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

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

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

"Top Notch" Holstien Herd Sires

No. 1. King Oakdale Colantha, No.
182831, Born Sept. 18, 1915. His sire's
three nearest dams average 30.87 lbs.
His dam is a 22.64 lb. junior 4 year old.
His dam's dam (30.59 lbs.) heads one of
the eight only combinations of three
direct generations of 30 lb. cows. His
dam's sire carries 50% the same blood
as Grace Payne 2d's Homestead the first
35 lb. cow, granddam of Segis Fayne
Johanna, the only 50 lb. cow. Hand-
somerly marked—about $\frac{3}{4}$ white—Price
\$250.00.

No. 2. Segis Korndyke Axelina King,
No. 182935, Born Jan. 15, 1916. His sire
is brother to the \$50,000.00 bull. His
sire is grandson to the great King Segis.
His sire is grandson to the first 37 lb.
cow. His sire's dam is a 25.51 lb. 3 $\frac{1}{2}$ yr.
old daughter of King of the Pontiacs.
His dam is a 22.09 lb. granddaughter of
Pontiac Korndyke. His dam's sire is
from a 28.99 lb. granddaughter of Hen-
gerveld De Kol. He traces four times to
Pontiac Korndyke and three times to
Hengerveld De Kol. Handsomerly marked—
about $\frac{3}{4}$ white—Price \$200.00.

McPherson Farms Co., Howell, Mich.

Swigartdale - Holsteins

Our herd average 1916: 11000 lbs. per cow in-
cluding 6, 2 yr. olds. All of our cows have A. R.
O. records averaging 21 lbs.—mostly made as 3 or
4 yr. olds.

For Sale—Bull calf born Aug. 6, '16. Sire Maple-
crest Korndyke Hengerveld (having highest
yearly record backing of any sire in the
world). Dam Katie Pearlina Cornucopia,
139689. He is $\frac{3}{4}$ white—beautifully marked—
straight top lines, very growthy and will be
ready for limited service by September 1917.
A grand individual, price - - - - - \$150

Bull Calf—Born Oct. 24, '16 Sire G. & B. Segis
Ulrica Pledge No. 108790. Dam Hamden Segis
Bessie No. 225929. This is a very toppy calf,
straight, masculine and most perfect dairy
type. Dam has a 21 lb. record as a 3 yr. old.
This calf will prove to be half the value of
your herd if you raise your heifer calves.
Price - - - - - \$100

Also several younger calves from high producing
dams.

Lest We Forget—Home of the greatest show herd
of Berkshires in the State. A fine lot of open
and bred gilts, also boars of serviceable age.

SWIGARTDALE FARM
PETERSBURG, MICH.

Bigelow's Holstein Farms,
BREEDSVILLE, MICH.

Have Some Fine Registered Stock For Sale

Holstein Bulls

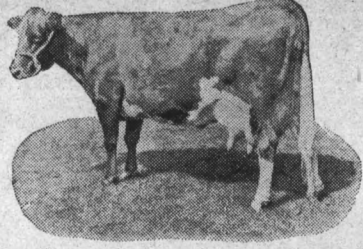
1 to 9 months old. Dam's A. R. O. Our herd sire is
Johanna McKinley Segis 3d. 7 nearest Dams aver-
age 27.25 BLISSVELDT FARMS, Jenison, Mich.

This Guernsey Grade Cow
produced yearly for five consecutive
years an average of 11490 lbs. of milk
and 604 lbs. of butter fat, equivalent to
705 lbs. of butter.

Buy a GUERNSEY BULL for Your Grade Herd

Write for our free booklets about GUERNSEYS

The American Guernsey Cattle Club
Box W.M. Peterboro, N. H.



Jerseys and Duroc Jerseys

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

Brookwater offers to sell a few choice bull calves of this kind.
They are selling—get yours soon. Also Duroc Jersey Fall Boars ready for spring service. Full
particulars and price on application. Better yet, visit the farm.

H. W. MUMFORD, B. W. MUMFORD, O. F. FOSTER, MANAGER
Ann Arbor, Mich., R. 7.

10 HOLSTEIN BULLS at FARMERS' PRICES

Sired by Long Beach DeKol Korndyke. His sire Friend Hengerveld DeKol Butter Boy. Dam a daughter of
Pontiac Aggie Korndyke. She has a 1200 lb. record, 11-30 lb. sisters, 5-1200 lb. sisters. Her dam, a daughter of
Friend Hengerveld DeKol Butter Boy has 1000 lb. year record. Has 4-30 lb. sisters, 3 sisters above 1200 in year.
LONG BEACH FARM, AUGUSTA, (Kalamazoo, Co.,) MICH

Do You Want A Bull?

Ready For Service.

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

EDWIN S. LEWIS, Marshall, Mich.

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

REG. HOLSTEINS: Herd headed by Albina Bonte
Butter Boy No. 93124. Dam's record at 6 yrs. butter
28.53 lbs. milk 619.4. Yearly record at 2 $\frac{1}{2}$ yrs. butter
802 lbs. milk 1822 lbs. W. B. READER, Howell, Mich.

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

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

R. BRUCE McPHERSON, HOWELL, MICH.

OAK LEAF FARM

Herd Sire

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

Registered Holsteins. Young bull ready for service.
guaranteed. W. B. Jones and J. F. Lutz, Chichester, Mich.

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

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

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

842 Lbs. BUTTER

Is the average of the semi-official records of our herd
bull's dam (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.
Peaceland Stock Farm, Three Rivers, Mich.
Chas. Peters, Herdsman, C. L. Brody, Owner, Port Huron, Mich.

WINNWOOD HERD

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

Have for sale 6 Maplecrest Korndyke Hengerveld
Holstein bulls. One 12 months; one 6 months; one 2
months, all out of A. R. O. dams. One male 12 lbs.
in butter in 7 days as a 1 $\frac{1}{2}$ yr. old. Another 21 lbs.
in butter in 7 days as a 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.

1200-lb. Bred Young Bulls

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

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

Ten Good Young Holstein Cows For Sale

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

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

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

FOR SALE Reg. Holstein cow, 10 yrs old,
record at 4 yrs. old. Price \$200.00. Chas. I. Cook,
Fowlerville, Box 438, Michigan.

HOLSTEIN COWS: bred yearlings and calves for
sale. Every cow has produced a vigorous calf dur-
ing year. C. L. Hallett & Son, Okemos, Mich.

For Sale Holstein bull calf, dam A. R. O. 24.13, 4 yr.
old. Price \$80. Reg. and Del. One from un-
tested dam \$30. J. R. Hicks, St. Johns, Mich.

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

Rinkland Herd Reg. Holstein Friesian Cattle
Herd average 12000 lb. milk
each. John A. Rinke, Warren, Mich.

Veterinary.

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

Founder.—Have a mare that was
foundered 18 months ago; now her
hoofs are dry and brittle; I am inclin-
ed to believe that her hoofs are not
growing enough and I forgot to say
that she travels best on soft road. R.
D., Traverse City, Mich.—She should
be shod with a wide-webbed, rolling
motion shoe, and apply wool fat to
hoofs once or twice a day.

Indigestion.—We have a cow three
years old that will soon freshen, at
which time she will have her second
calf. For the past few months she has
not thrived and is beginning to act
very much like her mother, who died
young. D. G. S., Flint, Mich.—Perhaps
your cow needs a change of feed, also
give her $\frac{1}{2}$ oz. of ground red cinchona,
 $\frac{1}{2}$ oz. ground gentian and two table-
spoonfuls of powdered charcoal at a
dose in feed two or three times a day.

Wart on Teat.—I have a heifer due
to calve in May; on her front teat, up
next to the bag she has what appears
to be a wart about the size of a wal-
nut and the neck of it is about the
size of a small finger. There are several
other small bunches near by
which appear like warts. F. K., Wayne,
Mich.—Bunches of this kind are only
skin deep and should be cut out, at
which time all the wart-like tissue
should be cut off.

Contagious Abortion.—I have two
cows three and five years old that lost
their calves at about seven months.
These cows have had good care and I
am unable to tell what should have
caused them to miscarry. I have three
more cows to calve which appear to be
all right. What would you advise me
to do? J. G., Twining, Mich.—Doubt-
less your cows suffered from contagi-
ous abortion infection and it is now
too late to stop other cows aborting.
However, you had better give them
good care and keep your stable clean
and disinfected. I have repeatedly pre-
scribed through these columns how to
treat these kinds of diseases, but it
must be understood that the results of
such treatment is not always by any
means satisfactory.

Indigestion.—I have some hogs that
are not thriving, have rather a poor
appetite for either slop or corn. They
are nearly a year old and only weigh
about 100 pounds. H. E. P., Monroe,
Mich.—Mix together equal parts gin-
ger, gentian, bicarbonate soda and
charcoal, give each pig a teaspoonful
at a dose in feed night and morning.

Serous Abscess.—I have a yearling
colt that had a bunch come on his
breast; our local Vet. called it an ab-
scess and lanced it. There was just
a watery discharge and the wound has
about healed, but there is still a bunch
and the tissues seem to be growing to
the bone. N. M., Richmond, Mich.—
Paint the bunch with tincture iodine
once a day.

Fungus Growth on Jaw.—I have a
mare with a growth beneath the lower
lid of the right eye. Burnt alum eats
it out, but does not cure it nor prevent
it growing very rapidly whenever the
alum does not cover. It is a granulat-
ed appearance resembling proud flesh.
E. L. W., Newaygo, Mich.—Apply equal
parts of calomel and boric acid, or re-
move the growth with a knife, then
apply boric acid twice a day.

Paralysis.—I would like to know
what can be done for a cow that suf-
fers from paralysis, is down and un-
able to get up, but has a fairly good ap-
petite. J. G., Lennon, Mich.—Give
your cow 1 dr. fluid extract nux vom-
ica, 30 grs. of potassium iodide and 3
drs. of Fowler's solution at a dose in
a quart of water as a drench or in feed
or drinking water three times a day.
Apply mustard and water to back
three times a week. She should be
placed in a sling and assisted on foot
twice daily.

Nasal Catarrh—Feline Distemper.—
I have a cat about two years old that
has something like distemper. A heavy
mucus discharge comes from both nos-
trils and eyes, and I might say that he
has been sick for some time and it is
rather offensive to have him come in
the house. Mrs. C. H., Fenton, Mich.—
Chronic nasal catarrh and sub-acute in-
flammation of the mucus membranes
of head, following distemper, are usu-
ally incurable and healthy cats are so
plentiful that I do not believe you had
better attempt to treat him with any
degree of hope of effecting a cure. Cats
resist treating the nasal passages; be-
sides, it is not easy to give them medi-
cine. All things considered, I believe
you had better either chloroform or
drown your cat.

Dairymen!
—The Truth

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

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

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

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

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

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

JERSEYS FOR SALE

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

FOR SALE REGISTERED JERSEY BULLS

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

FOR SALE Yearling Jersey bull from regis-
ter of merit stock. HILLSDALE
FARM JERSEYS. Great producers.
O. & O. DEAKE, Ypsilanti, Michigan

Maple Hill Farm Registered Jersey Cattle

Stock under 25 years all sold.
J. R. Worthington, R. No. 7, Lansing, Michigan

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

The Wildwood Farm

Breeder of Line bred, Majestic 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.

Shorthorn Cattle of both Sex for Sale

W. W. KNAPP, Howell, Michigan.

Bidwell Shorthorns

"For Beef and Milk"

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

BIDWELL STOCK FARM,
Box B, Tecumseh, Michigan.

RICHLAND SHORTHORNS

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

Horse Owners Should Use GOMBAULT'S CAUSTIC BALSAM

The Great French Veterinary Remedy.
A SAFE, SPEEDY & POSITIVE CURE.

Prepared exclusively
by J. E. Gombault, ex-
Veterinary Surgeon to
the French Government
Stud.



SUPERSEDES ALL CAUTERY OR FIRING.

Impossible to produce any scar or blemish. The safest best Blister ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable.

WE GUARANTEE that one table-spoonful of Caustic Balsam will produce more actual results than a whole bottle of any liniment or spavin cure mixture ever made.

Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address

THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

Says the Calf



Ask ME - I know

The calf knows that when bossy has a sore udder or teats the milk comes hard and the cow is restless and irritable. A cow that is nervous and uncomfortable cannot yield her full milk supply.

Bag Balm is a wonderfully effective, healing ointment, and quickly clears up scratches, cuts, chaps, bruises, inflammation, or caked bag. A valuable aid in treating bunches and strictures. Have a package on hand and keep little hurts from getting big.

Sold by feed dealers and druggists in generous 50c packages. Write for our free booklet, "Dairy Wrinkles."

DAIRY ASSOCIATION CO.
Lyndonville, Vt.

BAG BALM
MADE BY THE
TOWER-PURE
PEOPLE



everything about a rainy day seems to say to keep dry, to work in comfort, wear the FISH BRAND REFLEX SLICKER \$3.50

DEALERS EVERYWHERE.
A. J. TOWER CO. BOSTON.



Don't Get Caught Like This!

You'll need horse badly from now on. Why take risk or lay up because of lameness? Send for

SAVE-THE-HORSE

THE humane remedy for lame and blemished horses. It's sold with signed Contract-Bond to refund money if it fails to cure SPRAIN, Ringbone, Thorpin and ALL Shoulder, Knee, Ankle, Hoof and Tendon Diseases, and while horse works.

Our 96-page FREE BOOK is the last word in the treatment of 58 kinds of lameness. It's our 21 years' experience. Expert veterinary advice. Sample Contract and BOOK—ALL FREE.

TROY CHEMICAL CO., 20 Commerce Ave., Binghamton, N.Y.
Druggists everywhere sell Save-The-Horse with CONTRACT, or we send by Parcel Post or Express Paid.

Please Mention The Michigan Farmer When Writing to Advertisers

Hard Hoofs.—What shall I do for a horse whose hoof and frog of foot becomes hard, causing lameness? I might say that I do not believe this horse suffers from grain founder. W. B. Hesperia, Mich.—Stand horse in tepid water one hour a day, then apply lanolin (wool fat) to hard hoof once a day. Wet clay is better than water if you can secure it.

Serous Abscess.—I have a yearling colt that had a bunch come on breast; our local Vet. called it an abscess and lanced it. There was just a watery discharge and the wound has about healed, but there is still a bunch and the tissues seem to be growing to the bone. N. M., Richmond, Mich.—Paint the bunch with tincture iodine once a day.

Indigestion—Weakness.—I have a horse five years old that is low in flesh, perspires freely while standing in stable, and is weak. G. H. L., Hastings, Mich.—Clip your horse, examine his teeth, give him 1 dr. of ground nux vomica, 1 dr. ground cinchona, 1 oz. of ground gentian and 1 dr. of acetate of potash at a dose in feed three times a day. Be sure and keep your stable well supplied with fresh air.

Paralysis.—I would like to know what can be done for a cow that suffers from paralysis, is down and unable to get up, but has a fairly good appetite. J. G., Lennon, Mich.—Give your cows 1 dr. of fluid extract nux vomica, 30 grs. of potassium iodide and 3 drs. Fowler's solution at a dose in a quart of water as a drench or in feed or drinking water three times a day. Apply mustard and water to back three times a week. She should be placed in a sling and assisted on foot twice a day.

Partial Dislocation of Stifle.—I have a six-year-old cow that has a hitch in one hind leg which shows every time she is turned out. Her leg appears to be perfectly stiff and rigid, then suddenly she appears to get over it and walks fairly well. She has been in this condition for nearly a year. F. M. L., Sand Lake, Mich.—A chronic ailment of this kind is not easily remedied; however, you will obtain fairly good results by clipping hair off stifle and applying one part red iodine mercury, one part powdered cantharides and eight parts fresh lard twice a month.

Weakness.—Our old gray horse has not laid down for the past four or five days. We cannot account for it, because this is the first we have noticed him persist in standing up. We suspected that it might be a stoppage of his water, but with very little kidney medicine he passed urine freely. When led out of the stable, he will lie down and roll as usual. M. A. C., Attica, Mich.—Perhaps you had better place him in a box stall, instead of keeping him in an open one. Also give him a ½ dr. of ground nux vomica, 1 dr. of acetate of potash and ½ oz. of ground gentian at a dose in feed three times a day. Perhaps if he had enough exercise or work to tire him, he would lie down as usual.

Barren Mare.—I have a mare now 16 years old that has raised several colts, but failed to get with foal after being bred a year ago, also last fall. She appears to be in fairly good health, but drinks too much water, is fed clover hay and occasionally her bowels are too loose. O. H., Union City, Mich.—Give your mare a teaspoonful of powdered sulphate of iron, a tablespoonful of cooking soda and a tablespoonful of ground gentian at a dose in ground feed three times a day. Feed her less clover and avoid letting her drink large quantities of water at a time, but water her often. Dissolve 2 ozs. of bicarbonate of soda in three pints of clean boiled water and after washing out vagina with clean tepid water, inject her with this soda solution six or eight hours before she is mated. Perhaps you had better breed her to a Jack.

Hogs Have Worms.—Please tell me of a reliable remedy for worms in pigs and colts. W. J. A., Laingsburg, Mich.—Those of us who have undertaken to give individual hogs medicine, usually find it a little difficult; therefore, the most effectual method of medicating swine, particularly when large numbers are to be treated, is accomplished by medicating the slops or feed. The least expensive remedies are sulphate of iron, sulphate of copper and creosote; but remember, any one of these remedies given to pigs should be thoroughly mixed with the feed or slop and the medicine should be given once a day. It must also be remembered that the excrement from wormy hogs should be gathered and either treated with lime or burned, for if it is not, hogs that root in it remain parasitic. Give a 100-lb. hog 10 grs. of powdered sulphate iron at a dose daily, or 5 grs. of sulphate of copper, or five drops of creosote. The dose of sulphate of iron for a 1000 or 1200-lb. horse is 60 or 80 grains.

SEVENTH ANNUAL SALE OF THE HOWELL CONSIGNMENT SALE CO.

AT HOWELL, MICHIGAN, APRIL 26, 1917.

80 Head of Registered Holstein 80

of superior breeding and individuality from 30 to 33 lb. sires or bred to such, some carrying 62½% of the blood of the new 50.68 lb. cow. A chance to get foundation stock. Catalogs April 12. Mark B. Curdy, Secy., R. 6., Howell, Mich

Francisco Farm Shorthorns Big Type Poland Chinas

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

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

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

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

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

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

Cattle For Sale

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

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

SHORTHORNS Maple Ridge Herd, Established 1887. Young bulls for sale. J. E. Tanswell, Mason, 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: Gilts and mature sows that will farrow in April and May. Mammoth Toulouse Geese. Pekin Ducks \$2 each. Chase Stock Farm, R. 1, Mariette, Mich.

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

High Class Fall Boars and Gilts

\$25 to \$50. 2 fall yearling sows to farrow in June. S. O. W. Orpington eggs for hatching from latest big winter layers. \$3 for 30 eggs. Newton Barnhart, St. Johns, Mich.

Duroc Jersey Gilts We have a choice lot of good rugged heavy boned Gilts, registered. All bred to our Herd Boar, Jennings Pilot Wonder No. 13573. Bred for Apr. and May farrow. Send for pedigree. Prices reasonable. THE JENNINGS FARMS, V. M. Shoemith, Gen'l. Mgr., Bailey, Mich., R. F. D. 1.

Duroc Jerseys 18 bred gilts for sale priced to sell. Hastings, Mich.

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

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

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

Durocs A few big smooth Sept. gilts to be bred for early fall farrow. Bell Phone. E. D. Heydenberk, Wayland, Mich.

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

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

For Sale Duroc Jerseys. Six fall boars of big smooth kind. Prices right. J. H. McNICOLL, Route 4, Station A, Bay City, Mich.

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

Bred gilts all sold. A few fall pigs left. Booking orders for spring pigs. Vassar, Mich.

Chesters. F. W. ALEXANDER.

Raise Chester Whites

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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. sows sired by our undefeated Grand Champion School Master. The boar that has size and quality combined. All sold at age. Write and get our Catalogue 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. ORANDELL & SON, Cass City, Mich.

CHOICE BRED GILTS Bred to Big Prince 50002, sired by Wildwood Prince 1110 lb. 3 yr. Grand Champion at Iowa, sold for \$750. Ship C. O. D. J. Carl Jewett, Mason, Mich.

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

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

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

O. I. C's. Bred sows all sold. Have a few good last Sept. boars and this spring pigs. Good growthy stock. 1/4 mile west of depot. Otto B. Schulze, Nashville, Mich.

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

O. I. C. Gilts bred for June and July farrow. Also boars of September farrow. H. W. MANN, Dansville, Mich.

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

O. I. C. Choice gilts all sold. Choice fall pigs out of prize winning stock. Write for low prices. A. V. HATT, Grass Lake, Mich.

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

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

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

Poland Chinas. As big as good, as grow in Iowa. Herd headed by Gold Star Farrow. I can please you. Robert Martin, Hastings, Michigan

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

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

POLAND CHINAS bred gilts all sold, still have some choice fall pigs of large and medium type, at farmers' prices. F. D. LONG, R. 3, Grand Rapids, Mich.

Big Type Poland Chinas Sept. farrow, either sex, sired by Junco Wood, 800 lb. hog. A. A. WOOD & SON, Saline, Michigan.

HALLADAYS' HAMPSHIRE All sold, except fall pigs. We are booking orders for spring pigs. O. H. Halladay & Son, Clinton, Mich.

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

Big Type Poland China fall boars. Am booking orders for spring pigs, satisfaction guaranteed. G. W. Holton, R. 11, Kalamazoo, Mich.

LARGE Strain P. C. bred gilts all sold. A few long bodied heavy boned boars ready for service. 2 nice fall boars by Smooth Jumbo. H. O. Swartz, Schoolcraft, Mich.

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

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

HORSES

Percheron Stallions 25 Must Be Sold

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

Palmer Bros.,

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Raise mules and get rich. 120 fine large Jacks, Jennys and Mules, all ages for sale. A lot of big registered Jacks. No little cheap Jacks for sale. All guaranteed Jacks. Prices \$250 and up. Come on and see for yourself or write me today. KREKLER'S JACK FARM, West Elkton, Ohio

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Imported Suffolk Stallion Sudbourne Chinaman (3970) 802. Chestnut, six years old, sound, good sire, tall, roughly kind and true to work. 170 pounds, splendid family and no better breed of farm and draft horses. Price \$600 and satisfactory guaranty. W. W. Collier Pontiac, Mich.

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

KENTUCKY JACKS and SADDLERS BIG BONE Kentucky JACKS and JENNIES. 3 head FIVE and CUBAN GAITED STALLIONS, geldings and mares. Fancy MULE TEAMS. WRITE US. ASK FOR OUR 1917 CATALOG.

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Percherons, Holsteins, Angus, Shropshires, Durocs DORR D. BUELL, Elmira, Michigan.

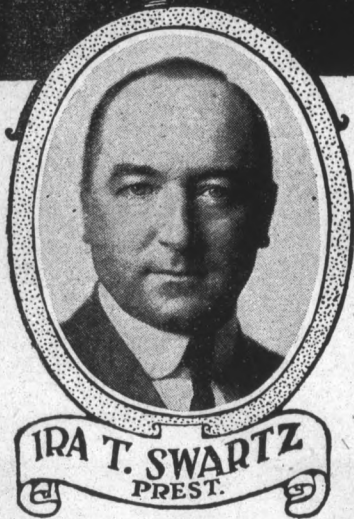
For Sale Two registered Percheron Stallions, one four and one seven. Colts to show. Write for particulars. W. E. WAFFLE, Burlington, Mich.

SHEPHERD PONIES Herd established 1881. 20 Head to select from. Write Dept. E for catalog. The Shadyside Farms, North Benton, O.

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

Stock Ads. Continued on Page 465

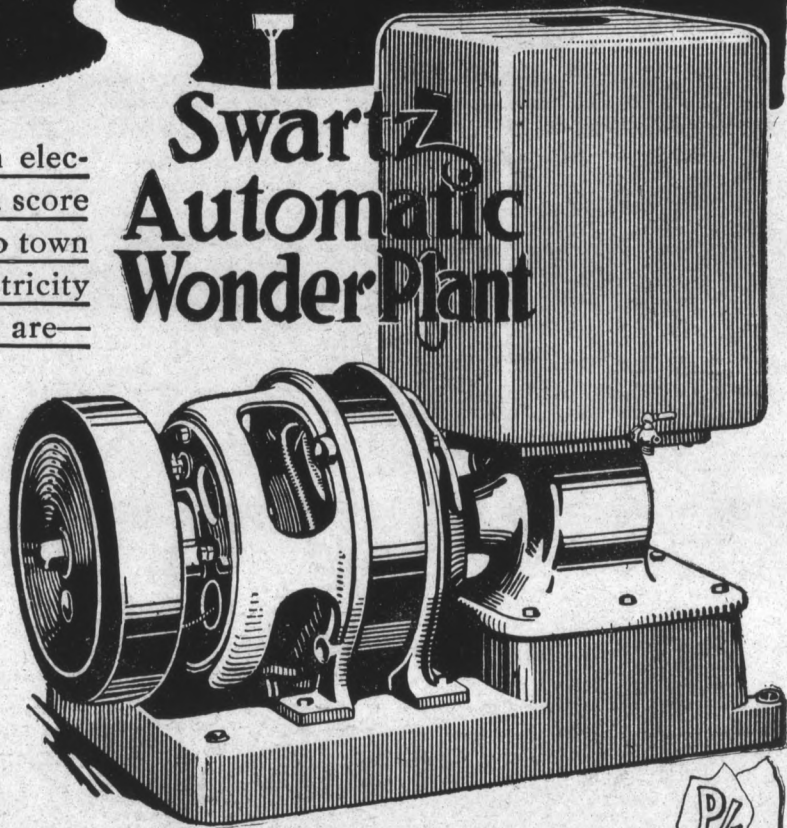
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Swartz Automatic Wonder Plant



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The entire plant is shown in the illustration, except the batteries. The large, square bowl is the water cooler; directly under the water cooler is the engine. The dynamo is between the fly-wheel on the left and the engine. It is direct-connected to the engine shaft. There are no belts or pulleys, no switches, ammeters, volt meters or other troublesome and complicated devices. The only thing not shown is the group of Edison Batteries which are a part of every Swartz System. The Swartz Plant is a simple honest-to-goodness electric plant that anyone can understand and run. It is automatic. Turning a key starts it, and it stops itself when the batteries are fully charged. See how solid and substantial it is. Looks like it was built to last a lifetime doesn't it? Well, it is. There is no other plant like this in the market, because we own and control the special features.

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